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REVISION OF AUSTRALIAN *SCIRTES* ILLIGER AND *ORA* CLARK (COLEOPTERA: SCIRTIDAE)

by C. H. S. WATTS*

Summary

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The Australian members of the genera *Scirtes* Illiger and *Ora* Clark (Coleoptera: Scirtidae) are revised. Thirty three species are recognised: *Scirtes helmsi* Blackburn, *S. exoletus* Waterhouse, *S. brisbanensis* Pic and 30 new species; *S. alastairi, S. albamaculatus, S. auritus, S. baroalba, S. beccus, S. calmi, S. crassiantennae, S. cygnus, S. emmaae, S. interstinctus, S. kaytae, S. macroconcolor, S. microrotundus, S. musica, S. nalyerensis, S. nigerpalpus, S. orientalis, S. peniculus, S. podlussanyi, S. pygmaeus, S. pinjarraensis, S. ruforotundus, S. rivularis, S. spatula, S. storeyi, S. tindaleensis, S. triangulus, S. victoriaensis, Ora floccosus, O. improtectus, O. justafloccosus.* The genus *Ora* is recorded from Australia for the first time.

All species are described and the male genitalia illustrated. A key is provided to the species.

KEY WORDS: Coleoptera, Scirtidae, Australia, taxonomy, morphology, distribution.

Introduction

Australian Scirtidae (Marsh Beetles) are a common component of fresh water ecosystems. The larvae are detritus feeders living in shallow water near the edges of ponds, marshes and rivers, or in situations were they can readily reach the surface to breathe. Adults are terrestrial, sheltering in thick vegetation near water or feeding on nearby flowering shrubs. Very little is known about their natural history, in major part due to the inability to identify species, other than the tree-hole dwelling *Prionocyphon niger* Kitching & Allsopp (1987) from South-eastern Queensland extensively studied by Kitching (Kitching & Callaghan 1982).

Blackburn (1891), Lea (1919), and Carter (1935) described a number of species (under the rubric Helodidae) but it was not until Jack Armstrong began his work on the group in the early 1950's that much taxonomic attention was paid to the family. Unfortunately he completed and published only one paper in which he described 3 genera and 14 species (Armstrong 1953). When he stopped his taxonomic work he was close to the completion of manuscripts on the genera *Cyphon* and *Scirtes*; so close to completion, that specimens of these genera labelled as paratypes are scattered in a number of collections.

The generic boundaries and placements of the Australian Scirtidae require close examination (Hiroyuki Yoshitomi *pers. com.*). This problem is less critical in the genera *Ora* and *Scirtes*, which, although both probably polyphyletic, are well characterised by the possession of greatly enlarged hind femurs that are used for jumping, presumably as a predator avoidance mechanism. The genus *Ora* has not previously been recorded from Australia but three species described here from Northern Australia appear to belong in the genus. The genus *Ora* is typically found in tropical rainforests in America, Africa and Asia (Yoshitomi *pers. com.*). The few Australian specimens know have all come from tropical areas close to if not in rainforest. The genus *Scirtes* occurs most commonly in tropical northern Australia where species are often collected at light but also in southern Australia with one species, *S. exoletus* Waterhouse, reaching northern Tasmania. This is in direct contrast to the situation in the remaining Australian Scirtid genera which have a more southern distribution and are commonest in Tasmania, in both number of species and in number of individuals.

Methods

For the identification of many species dissection and examination of the male genitalia is required. The female genitalia, although varying somewhat between the species examined, are more uniform and offer few taxonomic characters. For dried specimens, specimens were sexed by examination of the apex of the abdomen. In many females (approximately 80%) the ovipositor was at least partially visible. In a few species the tips of the male genitalia are also often visible. Specimens without extruded ovipositors were softened in an ultrasonic water bath for 30-45 minutes and the genital complex (see later) was teased, approaching dorsally, from the rest of the abdomen with a pair of fine forceps. The penis and tegmen were separated from the modified abdominal segments 8 and 9 and mounted on card in a drop of P.V.A. wood-working glue, which is transparent

* Division of Entomology, South Australian Museum.

when dry, or on a microscope slide in a polyvinyl alcohol based mountant. Drawings were made from camera lucida tracings. For a number of species only a handful, or fewer, of male specimens were available, often old and hence difficult to soften and dissect, which resulted in less than perfect material to work from. The male genitalia are complex and can vary enormously in structure between species. In these circumstances the preparations were often adequate to clearly indicate that a taxa was new but not good enough to allow a confident interpretation of fine structural detail. Thus I expect that in some cases my interpretations of the detail of the male genitalia may need to be modified when fresh material becomes available.

As well as the male genitalia, specimens of nearly all the small to medium sized species were also mounted on microscope slides.

Source of specimens

Specimens on which this revision was based were obtained from the following collections. AM, Australian Museum, Sydney; ANIC, Australian National Insect Collection, Canberra; QPIM, Queensland Department of Primary Industries, Mareeba; HUNG, Hungarian Natural History Museum, Budapest; NHM, Natural History Museum, London; NMV, Museum of Victoria, Melbourne; NTM, Northern Territory Museum and Art Gallery, Darwin; QM, Queensland Museum, Brisbane; SAMA, South Australian Museum, Adelaide; UQIC, University of Queensland Insect Collection, Brisbane.

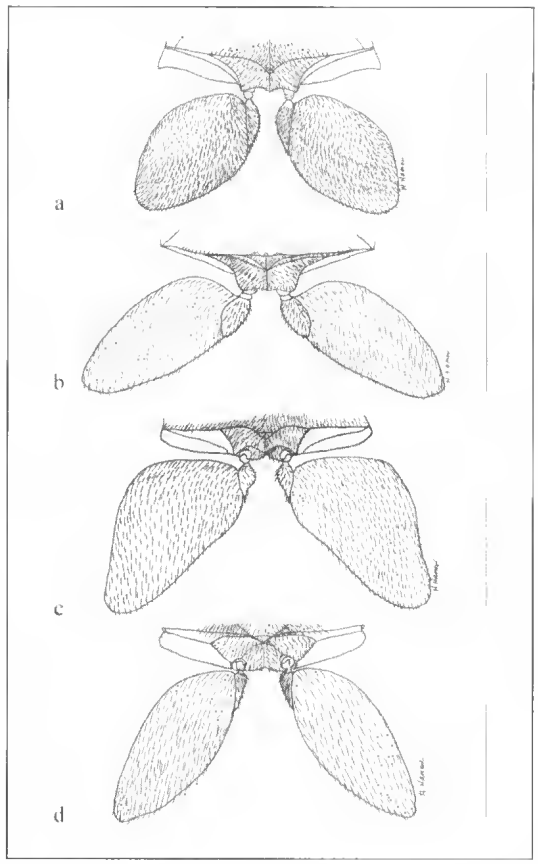


Fig. 1. Metacoxal plates, metatrochanters and metafemurs of; a) *Scirtes auratus* sp. nov.; b) *S. nigerpalpus* sp. nov.; c) *S. tindaleensis* sp. nov.; d) *Ora floccosus* sp. nov. Line = 1.0 mm.

Notes on morphology

Australian species of *Ora* and *Scirtes*, like their members in other areas, vary considerably in overall shape – oval, round, flanged, large, small – and colour – yellowish, reddish, black, mottled, spotted – but the differences are rarely discreet enough to differentiate species. Significant structural differences are few and I have only found two to be of much taxonomic use: the shape of the metacoxae and the male genitalia (penis and tegmen). The width of the metafemur, shape of the metatrochanter, grooving on the elytral epipleura and the relative size of the eyes are also useful to differentiate some species.

Metacoxae. In *Scirtes* the metacoxal plates are extended backwards in the midline and cover the articulation of the metatrochanters with the coxae. The extensions of the metacoxal plates can be relatively wide and short or almost square, and the hind edge either straight (Fig.1b) or concave (Fig.1c). In *Ora* the ventral portion of the extension is lacking or virtually so, completely exposing the articulation of the trochanters (Fig.1d).

Male genitalia. The basic male genitalia of Australian *Ora* and *Scirtes* consists of a penis and a bilobed tegmen situated immediately above it. Enclosing these are modified tergites and sternites of the 8th and 9th abdominal segments (Fig. 2). The nomenclature of the complex and very variable male genitalia of Scirtidae is unsettled. In this paper I follow Nyholm (1972).

Penis. The most common structure for the penis (eg Figs 20-30) of the Australian species consists of an oval "basal piece"("pala" of Nyholm) with a usually longer distal extension, the "trigonium", which is articulated with it. The basal piece has either one or two parameroids arising from its sides. This ground plan is recognisable in most species but in some, i.e. *O. floccosus* (Fig. 4) and *O. justafloccosus* (Fig. 5), the morphology of the separate pieces is so altered as to obscure their

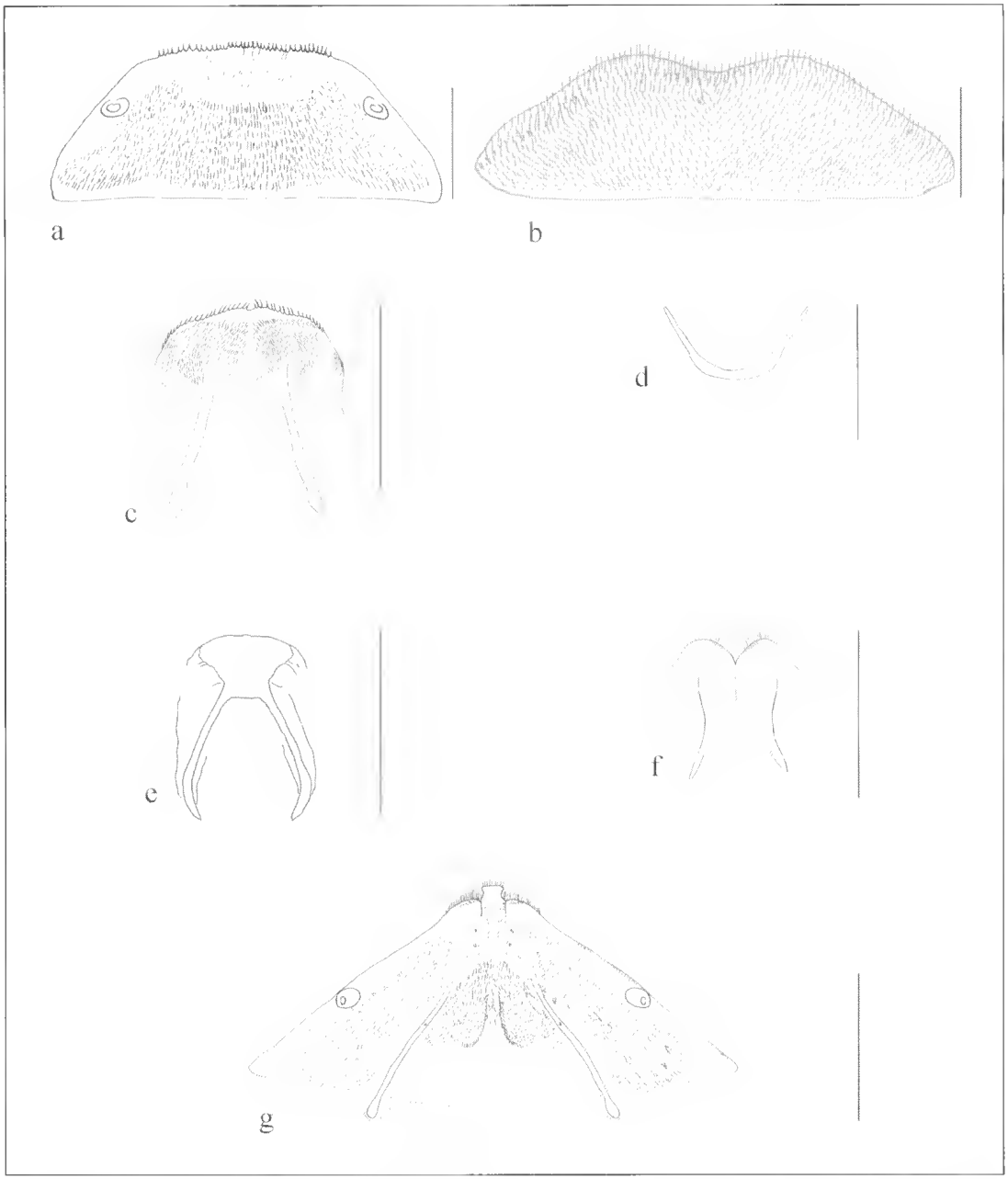


Fig. 2. Terminal abdominal segments of *Scirtes emmaae* sp. nov. a) tergite 7; b) sternite 7; c) tergite 8; d) sternite 8; e) tergite 9; f) sternite 9; g) Scirtes *ruforotundus* sp. nov. tergite 7. Line = 0.5 mm.

homologies. In one, *S. ruforotundus*, the opposite appears to have happened and the structure has been greatly simplified into a unique (for Australian *Scirtes*), small, unstructured penis and a relatively simple tegmen (Fig. 15).

Tegmen. The tegmen lies above the penis and is closely attached to it basally. Apically the tegmen consists of two usually symmetrical lobes which can be broad and close together through to long, thin and well separated. These lobes are thought to

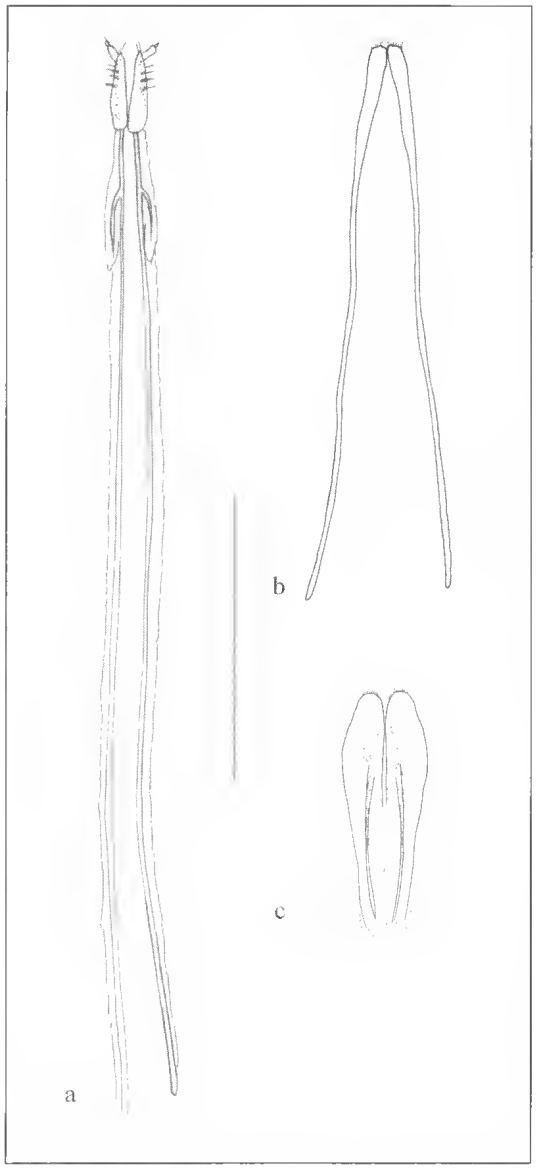


Fig. 3. Female genitalia of *Scirtes emmaae*. a) ovipositor; b) tergite 8; c) sternite 8. Line = 1.0 mm.

originate from parameres which are variably and often intimately connected with the tegmen in Scirtidae (Nyholm 1972). In a number of the species described the lobes of the tegmen are broad and wrap around or enclose the penis (eg. Fig. 35), in most of these species portions of the outer edges of the lobes are strongly sclerotonized. In *O. floccosus* and *O. justafloccosus* as well as enclosing the penis one lobe is closely articulated with the penis and the other lobe is seamlessly fused to it (Figs 4, 5).

Abdominal segments (Fig. 2). The 8th and 9th abdominal segments are modified and are only weakly sclerotonized. The 8th and 9th tergites are broad structures, each with lateral sclerotized strut-like structures (apodemes) extending backwards. The sternites are less strongly sclerotized, the 8th reduced to a small "U" shaped structure, with the arms pointing apically. The 9th tergite is broadly bilobed apically with a covering of short to medium length setae towards the apex.

Between the species examined there is not a lot of difference in the structure of these segments and I have not used them taxonomically.

Female genitalia (Fig. 3). Within the species examined there is some difference in the detail of the apex of the ovipositor (which is a modified 9th abdominal segment) but it is not great and I have not used it taxonomically in this paper. The ovipositor consists of a long thin basal portion (baculus) with a short two lobed apical piece (coxite) of variable length, with a small appendage at their tips (stylus). Closely attached to the ovipositor is the 8th tergite which has two long, thin, lateral struts/rods. The 8th sternite is similarly shaped but with much shorter lateral struts/rods.

Systematics

Scirtidae with greatly enlarged hind femurs are currently placed into two genera, *Ora* and *Scirtes*, depending on the form of the hind coxal plates. In *Ora* the basal articulation of the metacoxae is exposed (Fig. 1d) whereas in *Scirtes* it is covered at least to some extent (Figs 1b, 1c). Within the Australian species of both genera the general form varies considerably, however the details of the external morphology are very similar which makes any attempt to key the species or to clearly define groupings difficult. In contrast, the form of the male genitalia varies a lot between species, even in those that appear otherwise identical. Because of this many of the new species are essentially defined by the form of the male genitalia.

Nyholm (2002) has used the form of the male genitalia to propose a number of semiformal groups within the Northern Hemisphere members of *Scirtes*. I am not convinced that this approach is warranted at this stage of our knowledge of the Australian species and have not attempted either to use Nyholm's groupings or to propose new groupings. Purely for the convenience of this paper I have used the phrase '*S. helmsi* species complex" for a group of species, including *S. helmsi*, which are virtually indistinguishable on external morphology. On the evidence of the male genitalia they appear unlikely to be monophyletic.

Key to Australian species of *Ora* and *Scirtes*

1. Metaeoxal plates lacking ventral portion, completely exposing articulation of metatrochanters (Fig. 1d) (*Ora*).....2
   Metaeoxal plates with ventral portion eovering all or most of artieulation of metatrochanters (Figs 1a-e) (*Scirtes*).....4
2. Dorsal surface mottled; pronotal punetures very small 3
   Dorsal surface uniformly dark reddish-yellow; pronotal punetures strong.....
   .....*O. inuprotectus* sp. nov.
3. Penis with three long thin pieces (Fig. 4).....
   .....*O. floccosus* sp. nov.
   Penis with two long thin pieees (Fig. 5) .....
   .....*O. justafloccosus* sp. nov.
4. Each elytron with several large white areas; 2.0 – 2.3 mm long.....*S. albomaculatus* sp. nov.
   Elytra without extensive white areas; 2.0 – 5.5 mm long 5
5. Hind edges of individual metacoxal plates coneave.....6
   Hind edges of metacoxal plates straight, slightly convex or slanted towards midline 10
6. 2.6 – 3.6 mm long; metatroehanter elongate, 2.5x as long as wide (Fig.1a); uniformly golden yellow .....*S. auratus* sp. nov.
   3.2 – 5.5 mm long; metatroehanters 2.0x as long as wide (eg Figs 1b, 1c); reddish-yellow or darker.....7
7. Oval; body setae fine; eolour dark ehoeolate red, hind edges of metacoxal plates weakly concave
   .....*S. ruforotundus* sp. nov.
   Elongate-oval; body sctae strong; colour reddish-yellow; hind edges of metacoxal plates strongly concave.....8
8. Front of frons flat, edge weakly to strongly upturned; antennal segments thiek, weakly asymmetric with inner edge larger, partieularly in males; elytra reddish-yellow often with darker sides and near scutellum; lobes of tegmen with spines on outside, tip of penis hooked. (Fig.12).
   .....*S. kaytae* sp. nov.
   Front surfaee of frons evenly rounded, front edge not upturned; antennal segments relatively thin, symmetrieal; elytra uniformly reddish-yellow; lobes of tegmen smooth, tip of penis not hooked.....9
9. Sides of elytra subparallel; dark reddish-yellow; tips of tegmen slightly bulbous, triangular extension near bases of lobes (Fig.16); tip of penis with three thin lobes, (Fig.16).....
   .....*S. tindaleensis* sp. nov.
   Oval; light reddish-yellow tending darker towards front; tegmen lobes with small triangular extension on outsidc near apex (Fig. 9) ..... *S. emmaae* sp. nov.
10. 2.0mm long; almost round; elytra dark.....
    .....*S. microrotundus* sp. nov.
    2.0 – 5.1 mm long; oval rather than round; elytra variable in colour.....11
11. 4.5 – 5.0 mm long; uniformly light reddish-yellow (some speeimens with vague darker pattern on pronotum); elytra flanged .....
    .....*S. macroconcolor* sp. nov.
    2.0 – 5.1 mm long; colour variable but never uniformly reddish-yellow in species > 4.0 mm long; elytra variably flanged 12
12. Head, pronotum and often elytra with dark/light eolour pattern; epipleuron weakly grooved in front half; 3.5 – 5.0 mm long.....13
    Without eolour pattern (except occasionally on head and pronotum); 1.8 – 4.3 mm long; epipleuron flat except at extreme front.....
    (*S. helmsi* species complex. Only distinguishable on characters of male genitalia. See separate key below.)
13. Elytron with 3-4 disrupted darker stripes, elytron quite strongly flanged towards front.....
    .....*S. interstinctus* sp. nov.
    Elytron without linear markings, either uniformly reddish yellow or with darker bases and sides; elytron at most weakly and narrowly flanged.....*S. exoletus* Waterhouse

Key to males of the *S. helmsi* species complex

1. Small (2.2 – 2.5 mm). Trigonium long and thin with apex bent at right angles (Fig. 32), single parameroid long, thin, sinuous; tegmen broad, lobes short and slightly asymmetric (Southwestern Western Australia) .....
   .....*Scirtes pygmaeus* sp. nov.
   Not with above combination of characters.....2

2. One lobe of tegmen extremely long and thin, closely assoeiated with elongate trigonium and projecting well beyond apex of trigonium (Fig. 26) (Southwestern Western Australia) .....
   .....*Scirtes nalyerinensis* sp. nov.
   Tegmen lobes symmetrical or nearly so, tips never projeeting much beyond apex of trigonium
  3
3. Tegmen with two, well-separated finger–like lobes (eg. Fig. 24); trigonium of penis elongate > twice length of basal piece (eg. Fig. 40); one or two parameroids with the larger one elongate and usually with a hooked end (eg Fig. 40) 4
   Laeking above eombination of eharaeters: tegmen often with lobes broad and poorly separated (eg. Figs 31-33); trigonium of penis variably shaped, about same length or shorter than basal pieee (eg. Figs 21, 29, 34); parameroid(s) variable but usually not elongate with hooked end 10

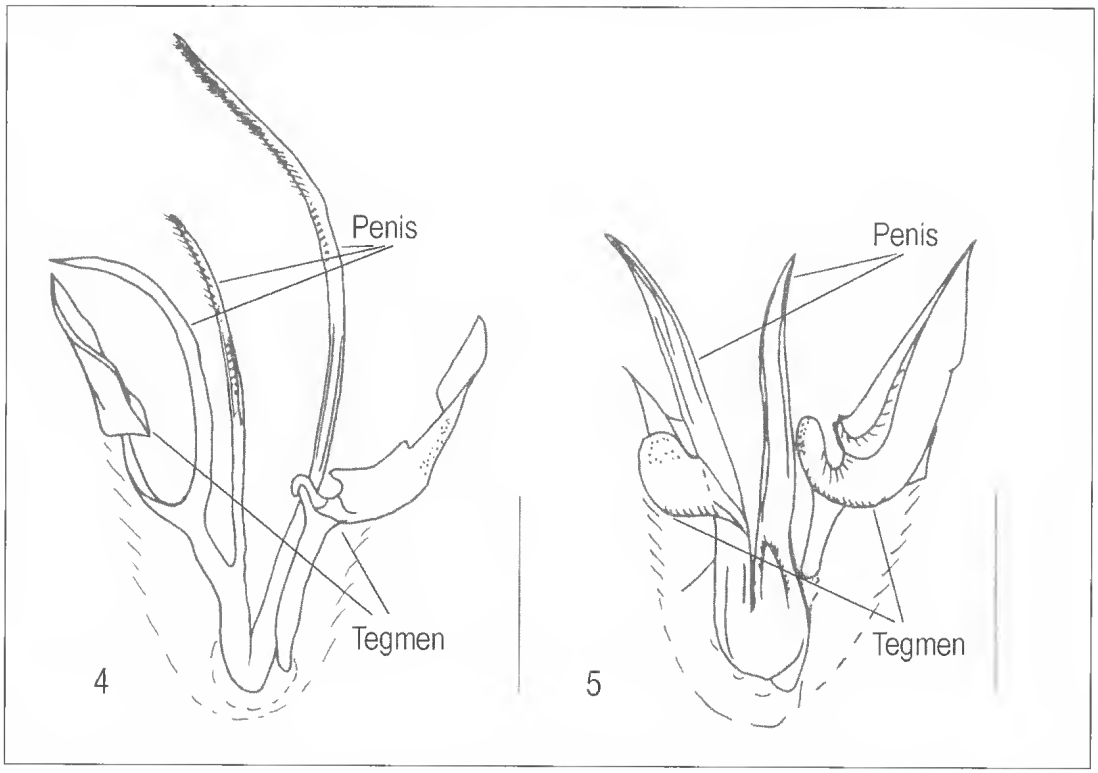
4. With well developed second parameroid (right hand one) which is one quarter to one third length of main parameroid (left hand one) (Figs, 27, 28, 33, 37) 5
Usually without second parameroid (Figs 20, 30, 24), if present, < a quarter length of main parameroid which is strongly hooked at apex (Fig.38) 8
5. Dark coloured, with dark antennae and palpi; elytron not flanged; trigonium of penis broad, tip rounded, slightly upturned. (Figs 27, 42) ..... *S. nigerpalpus* sp. nov.
Light coloured with pale palpi and at least the basal segments of antennae pale; elytra weakly flanged towards front; trigonium of penis narrower (Figs 28, 37). 6
6. Main parameroid sinuate towards apex (Figs 37, 44), penis approximately 0.4x length of body .... *S. victoriaensis* sp. nov
Main parameroid with apical hook, penis approximately 0.2x length of body 7
7 Mueh of body dark. Largest parameroid with abrupt hook (Figs 33, 41) ..... *Scirtes rivularis* sp. nov.
Body more or less uniformly yellowish. Largest parameroid hook not abrupt (Figs 28, 43) ..... *S. orientalis* sp. nov
8. Penis golfelub-shaped; trigonium long and thin, tip sharp, (Figs 24, 40) ..... *S. helmsi* Blackburn
Penis with apex expanded dorsal/ventrally near tip (Figs 20, 30, 38, 39) 9
9. Usually with very small right hand parameroid, left hand (main) parameroid with well-defined hook at apex (Figs 20, 38)... *S. brisbanensis* Pic
Only one paramcroid, with long hook (Figs 30, 39) ..... *S. pinjarraensis* sp. nov.
10. Trigonium of penis short 0.4x length of basal piece, strongly beak-shaped (Fig. 19) ..... *S. beccus* sp. nov
Trigonium of penis at least 0.75x length of basal piece, not beak-shaped 11
11. Trigonium of penis asymmetrieal, with prominent spine on inside (Fig. 25) ..... *S. musica* sp. nov.
Trigonium of penis more or less symmetrical, without spine on inside (eg Fig. 23) 12
12. Penis with two distinct parameroids (Fig. 21) .... *S. calmi* sp. nov.
Penis with only one parameroid (eg. Fig. 23) .13
13. Parameroid of penis swan-like (Fig. 23) ..... *S. cygnus* sp. nov.
Parameroid of penis more elongate, not swan-like 14
14. Tegmen with lobes thin, well separated (Figs 18, 22, 29, 31) 15
Tegmen with lobes broad, partly separated, tending to wrap around and enclose penis (Figs 17, 34, 35, 36) 18
15. Tegmen with lobes with distinet brush of setae near apex (Fig. 29) ..... *S. peniculus* sp. nov.
Tegmen lobes without setae 16
16. Penis complex, parameroid much larger than trigonium (Fig.18) ..... *S. baroalba* sp. nov.
Penis of more usual form, trigonium larger than parameroid (Figs 22, 31) 17
17. Parameroid hooked at apex, about two-thirds length of trigonium; tegmen lobes with serrated inner edges near apex (Fig. 22) ..... *S. crassiantennae* sp. nov.
Parameroid of penis not hooked, about same length as trigonium; lobes of tegmen smooth (Fig.31) ..... *S. podlussanyi* sp. nov.
18. Penis with trigonium broad (Fig. 34) ..... *S. spatula* sp. nov.
Penis with trigonium thin (Figs 17, 35, 36) 19
19. Penis with parameroid elongate, without apieal hook, nearly as long as trigonium (Fig. 35) ..... *S. storeyi* sp. nov.
Penis with parameroid short, either sinuate or hooked at apex (Figs 17, 36) 20
20. Body uniformly light reddish-yellow exccpt for darker head in somc; parameroid of penis stout (Fig.17); 2.2 – 2.6 mm long ..... *S. alastairi* sp. nov.
Dorsal surface chestnut, segments of antennae paler, shoulders of elytra and triangular patch at apex of elytra lighter, parameroid of penis more elongate (Fig. 36); 3.1 mm long ..... *S. triangulus* sp. nov.

Ora Clark, 1865
(Species listed in alphabetic order.)

Ora floccosus sp. nov.
(Fig. 4)

Types.
Holotype
male; " AUSTRALIA 99.1.13 Queensland, Pinnocle village (camping) leg. A. Podlussany", SAMA. *Paratypes*: 3; 1, "Cow Bay N of Daintree, N Qld. 27.xii.83 – 20.i.1984, I. C. Cunningham", QPIM; 1, "Edge Hill Cairns, at light, 24/4/65, J.G.Brooks", microscope slide, ANIC; 1, "AUSTRALIA n Qld 15 km NNW of South Johnstone Light Trap Nov 1987 Fay & Halfpapp", QPIM.

Description (number of disseeted males examined, 4)
Habitus. Length 3.3 – 4.2 mm., relatively flat, broadly oval.
Head. Light yellow-brown with darker patches; antennae light yellow-brown. Small, width between eyes about 2.3x dorsal width of eye; slightly



Figs 4-5. Dorsal views of tegmen and penis. Lines = 0.5mm. 4. *Ora floccosus* sp. nov. 5. *O. justafloccosus* sp. nov.

depressed inwards from eyes. Punctures small, moderately dense, each with a prominent whitish seta. Frons with sides slightly diverging, front edge straight or very weakly concave, edges weakly beaded. Segment 1 of antenna large, barrel-shaped; segment 2 smaller, barrel-shaped; segment 3 a little longer but narrower; segments 4-10 longer, broader, particularly middle ones; segment 11 a little longer than segment 10; segments quite thickly covered with short whitish setae.

Pronotum. Light yellow-brown with darker mottlings. Short, broad. Puncture small, even, moderately dense, each puncture with a whitish seta. Hind angles obtuse, front angles moderately extended forward, sides weakly beaded.

Scutellum. Light yellow – brown. Sides approximately equal length, lateral two weakly convex. Punctures small, weak.

Elytron. Light yellow-brown with darker mottlings. Sides widely flanged in middle particularly over metafemurs. Densely punctured punctures of uneven sizes, each puncture with a short whitish seta. Epipleuron wide in front quarter, widest some distance from shoulder, then narrowing evenly to near apex, weakly concave particularly near front.

Ventral surface. Light reddish-yellow. Pronotal process very narrow along whole length. Mesosternum with narrow groove for reception of pronotal process; tip just reaching to level of mesocoxae. Front triangular midline extension of metasternum narrowly triangular, strongly beaded; rear midline extension broad, more than twice as wide as long. Metacoxal plate a little wider than long, ventral part of plate virtually absent, completely exposing articulation of metatrochanter; anteriolateral angle extending narrowly some way along metasternum; sides weakly beaded; posteriolateral angles sharply pointed. Metatrochanter small, about 2.0x as long as wide. Metafemur moderately swollen, widest in middle, hind edge with large notch near apex. Notch bordered with v-shaped raised ridge. Dorsal metatibial spine relatively long, a little longer than twice size of ventral spine and about three quarters length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, dense, each with a short fine seta; reticulation moderate, fine, more pronounced towards rear; apex of apical ventrite truncated or weakly concave.

Male

Little external difference between sexes. Penis complex (Fig. 4). The trigonium appears to consists of three long thin pieces joined to each other near their bases. Penis lacking basal piece. Tegmen lobes asymmetrical, complex, one roughly sickle-like with the blade-like top portion closely enclosing one of the trigonium pieces and the handle-like lower portion closely held to but not fused with the trigonium piece (Fig. 4). The other lobe of the tegmen has its base seamlessly fused to a piece of the trigonium and the upper portion closely enclosing another piece of the trigonium. (The figure illustrates the genital capsule slightly teased apart: in life the tegmen lobes tightly enclose the three pieces of the trigonium.)

Variation

The strength of the notch on the hind femur and the strength of the colour pattern are variable.

Referred specimens – all female

1, Bramston Beach, near Innisfail, N Qld. 30 April 1976, D. H. Colless (open savanna), ANIC; 4, Cairns, 2/50 G B, J. G Brooks Bequest 1976, ANIC; 1, Russell R. at Bellenden Ker Landing NQ, 5m, 24 Oct – 9 Nov. 1981, EARTHWATCH/QLD MUSEUM, ANIC COLEOPTERA Voucher # 83-0588, QM

Etymology

Latin. "floccosus" – woolly.

Notes

This species and the very similar *O. justafloccosus* are distinctive species with widely flanged elytra and a generally 'woolly' appearance including the antennae and tarsi. These two species are separated most readily from *O. improtectus* by their mottled colouration and small pronotal punctures. *Ora floccosus* and *O. justafloccosus* can only be separated by the form of the male genitalia.

Ora floccosus appears to be a more southern species from around Cairns and *O. justafloccosus* more northern from around Iron Range. However too few male specimens are known to have much confidence in this geographic separation.

Ora improtectus sp. nov.
(Fig. 6)

Types

Holotype

male; "Stuart Range Q Jan – Feb 1927 Hale & Tindale", SAMA.

Paratypes

42; . 1, "15 54S 163 32E Batten Point, 30 km NE by E Borroloola, NT, 30 Oct.1975, M. S. Upton", ANIC; 2, "Cairns, 2/50, G.B". "J. G. Brooks Bequest, 1976", ANIC; 1, "Cairns 7-10-34" J. G. Brooks Bequest 1976", ANIC; 2, "Cairns dist., E. Allen" "1 52 52", SAMA; 2, "Halftide nr Mackay NEQ 8.ii.65 E. C. Dahms" QM; 1, "12.26S 130.56E Holmes Jungle, Berrimah 10km S of Darwin, NT, 8.xi.72, at light, E. Britton", ANIC; 5, "King R NT 10-1-16", NMV; 14, ditto, 7-1-16, 10 NMV, 4 slides SAMA; 3, "King R NT Coll by W. McLemman esq and pres by H. L. White esq 14.10.16", NMV; 1, "15 04S 145 07E Mt Webb Nat. Pk. QLD, 28 – 30 Sept 1980, T. Weir", ANIC; 1, "Nassau River NW Dunbar Stn., 18 Nov. 1983, A. Walford-Huggins", ANIC; 6, "Thursday Island, 10/52, CM", "J. G. Brooks Bequest 1976", 5 QPIM, 1 slide SAMA. 2, "Thursday Isl NQ Oct-1952", NMV; 1, " Smith Point NT 1.viii.1982 C.Wilson & S. Collins", "ex light trap", NTM; 1, "Stuart Range Q Jan – Feb 1927 Hale & Tindale", SAMA.

Description (number examined, 43)

Habitus. Length 2.5 – 3.6 mm., relatively flat, oval.

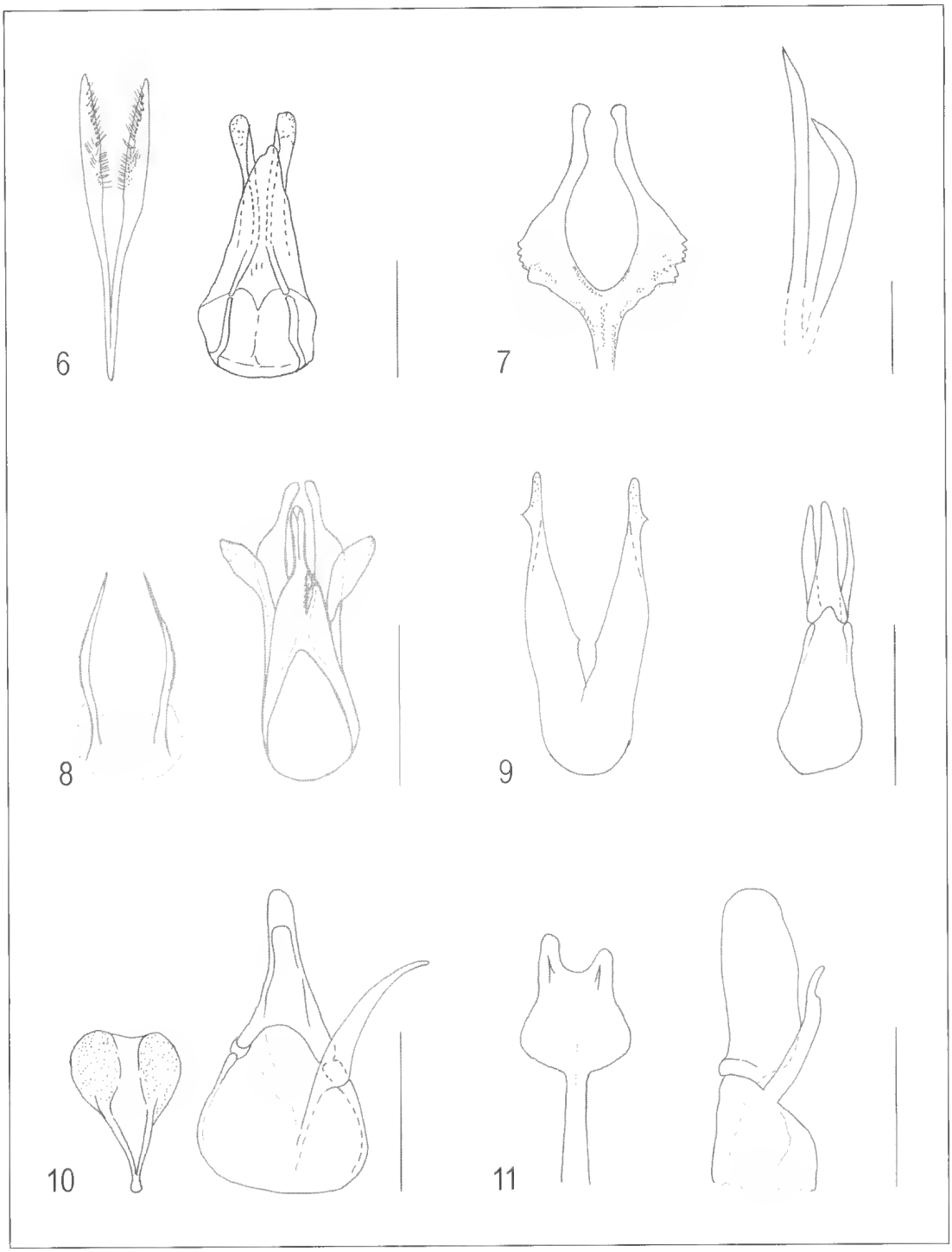
Head. Reddish-yellow to dark reddish-yellow; antenna light reddish-yellow. Small, width between eyes about 2.0x dorsal width of eye. Moderately and evenly punctate, each puncture with a relatively long setae. Frons with sides slightly diverging, front edge straight or very weakly concave, edges beaded. Segment 1 of antenna large, cylindrical slightly curved at base; segment 2 much smaller, cylindrical; segment 3 as long as segment 2 but a little narrower; segments 4 – 10 long, narrow, cylindrical, becoming progressively slightly smaller; segment 11 slightly longer than segment 10, moderately setose.

Pronotum. Reddish-yellow to dark reddish-yellow. Short, broad. Evenly covered with strong punctures, becoming almost confluent at sides, each puncture with a moderately long golden seta. Hind angles obtuse, front angles moderate produced forward, sides beaded.

Scutellum. Reddish-yellow, tending to be lighter than elytra. Sides approximately equal length, lateral two convex; punctures large, well separated.

Elytron. Reddish-yellow to dark reddish-yellow on disc becoming darker laterally and towards apex. Sides weakly and narrowly flanged, more strongly towards front. Moderately dense strong punctures, each puncture with a short yellow seta. Epipleuron relatively wide in front quarter becoming much narrower over rest of elytron, front portion with wide shallow longitudinal depression in many.

Ventral surface. Reddish-yellow with diffuse darker patches. Pronotal process very narrow between procoxae, apical portion not much wider. Mesosternum with narrow triangular groove for



Figs 6-11. Dorsal views of tegmen (left) and penis (right). Lines = 0.5 mm. 6. *Ora improtectus* sp. nov. 7. *Scirtes albamaculatus* sp. nov. 8. *S. auritus* sp. nov. 9. *S. emmaae* sp. nov. 10. *S. exoletus* Waterhouse. 11. *S. interstinctus* sp. nov.

reception of pronotal process; tip reaching just to level of front edge of mesocoxae. Front midline extension of metasternum narrowly triangular, beaded. Rear triangular midline extension of mesosternum broad, about twice as wide as long. Metacoxal plate a little wider than long, anteriolateral corner extending some way along mesosternum, ventral portion of plate absent towards rear, exposing articulation of metatrochanter; sides beaded; posteriolateral angle sharp. Metatrochanter small, about 2.0x as long as wide. Metafemur greatly swollen, widest well before middle, hind edge with moderate notch near apex; reddish-yellow, diffusely darker in places. Dorsal metatibial spine moderately long, about twice length of ventral spine and nearly as long as segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites reddish-yellow, often with diffuse darker areas; punctures rather sparse, very small, reticulation, strong, fine, more pronounced laterally; apex of apical ventrite truncated or weakly concave.

Male

Little external difference between sexes. Basal piece of penis short, rather square; trigonium much longer and for much of its length separated into two elongate parts with rounded tips, a broadly triangular thin structure lies on top of the trigonium for much of its length (Fig. 6). Tegmen longer than penis, lobes well separated, thin, with strong setae on inner edge in apical half (Fig. 6).

Variation

Colour varies from reddish-yellow to dark reddish-yellow.

Etymology

Latin. "Improtectus" – unprotected, a reference to the unprotected metatrochanters.

Notes

A small northern species separated from *O. floccosus* and *O. justafloccosus* by its smaller size, uniform rather than mottled dorsal surface and strong pronotal punctures. In contrast to *S. floccosus* and *S. justafloccosus*, the male genitalia are relatively normal. The tegmen is unique in having strong setae/spines on the inside towards the tips.

Ora justafloccosus sp nov.
(Fig. 5)

Types

Holotype

male "12.43S 143.18E, 11 km ENE of Mt Tozer QLD, 11-16 July 1986, T.Weir & A Calder", ANIC.

Paratypes

3, male; 1," Iron Range, Cape York Pen. N. Qld. 26 – 31 May 1971. G. Monteith" "UQIC Reg# 53698", UQIC; 1 slide, ditto, "11 – 17 May 1968 UQIC Reg# 53696", UQIC; 1, "12.43S 143.17E 9km ENE Mt Tozer QLD 5 – 10 July 1986 T. Weir & A. Calder", ANIC; 1, "15 03S 1435 09E 3 km NE Mt Webb QLD 30 April – 3 May 1981 A. Calder", ANIC.

Description (number examined, 4).

As for *O. floccosus* except as follows.

Male

Penis consisting of two long thin pieces, slightly grooved and not as long as in *O. floccosus* (Fig. 5). One lobe of tegmen relatively similar to *O. floccosus* (Fig. 4) the other lobe fused to penis much nearer its apex than in *O. floccosus* (Fig. 5).

Etymology.

Latin. "Juxta" – near. A reference to its close appearance to *S. floccosus*.

Notes

See under *O. floccosus*.

Referred specimens – all female

1, Captain Billy Creek Cape York Pen, N Qld, 142.50E 11.40S, 9 – 13/7/75, G. B. Monteith, QM; 1, Iron Range Cape York Pen. N. Qld. 11 – 17 May 1968, G. Monteith, UQIC Reg# 53695, UQIC; 3, Iron Range Cape York Pen. N. Qld. 16 – 23/11/65, G. Monteith, UQIC Reg# 53692, 88 – 89, UQIC; 1, Iron Range Cape York Pen Qld 28 April – 5 May 1968, G. Monteith, UQIC Reg# 53697, UQIC.

***Scirtes* Illiger**, 1807

a) Species other than those in the *S. helmsi* species complex. Arranged in alphabetic order.

Scirtes albamaculatus sp. nov.
(Fig. 7)

Types.

Holotype

female; "Cairns Queensland F.H.Taylor", ANIC.

Paratypes

4; 1, "AUSTRALIA, Qld Bramston Beach Eubenangee Swamp, 4.v.1987, J.K. Bulcjunas, collected on *Melaleuca quinquenervia*", ANIC; 1, Cape Tribulation, 8.1.1983, R. Storey, At Light, QPIM; 1, "Cape Tribulation, 1 Aug – 15 Sept 1987, A Walford - Huggins, coastal rainf. NQ, intercept trap, ANIC; 1 slide, Cow Bay N of Daintree, 25.1 – 7.2 1984, I. C. Cunningham, SAMA.

Description (number examined, 5)

Habitus. Length 2.0 – 2.3 mm., relatively flat, oval.

Head. Reddish-yellow, antenna yellowish. Small, width between eyes about 3.2x dorsal width of eye. Moderately and evenly punctate. Frons with sides moderately converging, front edge slightly concave, edges weakly beaded. Segment 1 of antenna large, barrel-shaped; segment 2 about same shape and size, segment 3 about half as long and narrower; segments 4 – 10 same length as segment 2, cylindrical, progressively becoming slightly broader and flatter, segment 11 a little longer than segment 10.

Pronotum. Reddish-yellow to dark reddish-yellow, disc somewhat darker, with slight darker markings. Short, broad. Evenly and moderately punctate, each puncture with a moderately long golden seta. Hind angles obtuse, front edge sinuate, front angles weakly projected forwards, sides weakly beaded.

Scutellum. Reddish-yellow to dark reddish-yellow. Sides approximately equal length, lateral two slightly convex.

Elytron. Reddish-yellow to dark reddish-yellow, with two large areas of dirty white. Sides beaded rather than flanged. Moderately and evenly punctate, each puncture with a short yellow seta. Epipleuron yellowish with colour varying to reflect elytron colour, moderately wide in front quarter, becoming much narrower over rest of elytron, central area of front portion widely depressed slightly.

Ventral surface. Dark reddish-yellow with lighter areas, appendages tending lighter. Pronotal process very narrow. Mesosternum with relatively broad, triangular groove for reception of pronotal process; tip reaching past level of mesocoxae. Front extension of mesosternum small, in shape of equilateral triangle; rear midline extension in midline large about twice as wide as long. Metacoxal plate wider than long, anteriolateral corner extending some way along metasternum; hind edge slightly concave, slanting strongly to midline; length of midline short, about as long as midline of triangular backward extension of mesosternum; sides weakly beaded; posteriolateral angles bluntly pointed. Metatrochanter small, elongate, about 3x as long as wide. Metafemur greatly swollen, widest near middle. Dorsal metatibial spine moderately long, about twice size of ventral spine and a little over three quarters length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; reticulation, moderate, fine, more pronounced towards rear; apex of apical ventrite truncated or weakly concave.

Male

Little external difference between the sexes. The only available preparation of the male genitalia is poor. From what can be made out the genitalia are comparatively small and complex (Fig. 7). There are at least two long (? trigonium) pieces to the penis reminiscent of species such as *O. floccosus*. The lobes of the tegmen are narrow, bluntly tipped and well separated (Fig. 7).

Variation.

Little variation within the five know specimens, except in the shape of the white areas on the elytra, with one specimen having the front patch broken up into two discreet patches on each elytron.

Etymology

Latin. "Albus"- white, "macula"- spot, a reference to the white spots on the elytra.

Notes

A distinctive small species, with small eyes and several distinct white patches on its otherwise dark elytra, a large segment 2 of the antenna and elongate metatrochanters. The hind edges of the metacoxal plates are slightly concave and slant strongly backwards towards the midline resulting in the midline suture being relatively short compared to other species.

Scirtes auratus sp. nov.
(Figs 1, 8)

Types

Holotype

male, "Qld. Townsville 10km NW 23/3/96 C. Watts", SAMA.

Paratypes

34; 1, "Homestead, Silver Plains Via Coen, N. Qld. 11.x11, 1964 G. Monteith" "UQIC Reg# 53649", UQIC; 25, "Ross R. Dam Spillway Townsville, NQ 1 Dec. 1986 T. Vernon ex *Melaleuca leucodendra*", ANIC; 1, "2k N Mt Molloy Qld. 5.2.97 C. Watts", SAMA; 3, "5k N.W. Mt Molloy Qld. 5.2.97 C. Watts", SAMA; 2, "Nardello's Lagoon Qld. 6.2.97 C.Watts", SAMA; 1, "Qld. Bushland Beach 20km N Townsville A. J. Watts 23 – 30/12/97", SAMA; 1," Qld. Bushland Beach 20km N Townsville, at light, A. J. Watts 16 – 18 Jan 1998", SAMA.

Description (number examined, 110)

Habitus. Length 2.6 – 3.6 mm, relatively flat, oval.

Head. Light reddish-yellow, antennae light reddish-yellow. Small, width between eyes about 2.8 x dorsal width of eye. Quite strongly and evenly punctate, well covered with long golden setae. Frons with sides diverging in front of antennal base which is deeply excised into side of head; front edge straight or very weakly concave, edges not beaded.

Segment 1 of antenna large, barrel-shaped; segment 2 smaller, barrel-shaped; segment 3 smaller and narrower; segments 4 – 10 long, reetangular, flattish; segment 11 a little longer than segment 10, quite strongly setose.

Pronotum. Light reddish-yellow, sometimes with diffuse darker mottlings or patterns. Short, broad. Evenly and moderately punctate, stronger laterally, each puncture with a long golden seta. Hind angles obtuse, anterio- lateral angles moderately produced, sides weakly beaded.

Scutellum. Light reddish-yellow. Relatively large, sides approximately equal length, lateral two weakly convex; punctured as on pronotum.

Elytron. Light reddish-yellow with diffuse darker areas in some. Sides weakly and narrowly flanged in front third. Moderately and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide in front quarter becoming much narrower over rest of elytron, front portion widely and shallowly grooved.

Ventral surface. Light reddish-yellow, sometimes with diffuse darker areas. Pronotal process very narrow. Mesosternum with narrow groove for reception of pronotal process, tip reaching past level of front margin of mesocoxae. Front midline extension of metasternum relatively small, sharply triangular; rear midline extension of metasternum broad, at least twice as wide as long, apex rounded. Metacoxal plate a little longer than wide, with anterio-lateral corner extending some way along metasternum; hind edge moderately concave, posterior-lateral angles sharply pointed. Metatrochanter narrow, elongate, about 2.5x as long as wide (Fig. 1). Metafemur greatly swollen, widest just before middle, moderate indentation on hind edge near base. Dorsal metatibial spine relatively short, about twice size of ventral spine and about half-length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; with moderate fine reticulation, more pronounced towards rear; apex of apical ventrite strongly concave.

Male

Penis complex, two equal sized fleshy lateral lobes (? parameroids), trigonium trilobed with central lobe with small, strongly chitinized, serrated structure at its base (Fig. 8). (An alternative interpretation is a single lobed trigonium and upper and lower pairs of parameroids.). Tegmen lobes shorter than penis, elongate, thin, pointed, well separated, some quite strong spines on outside edge (Fig. 8).

Variation

Colour varies from light reddish-yellow to a golden yellow, with head and pronotum with diffuse darker areas or even distinct dark patterning in some.

Etymology

Latin. "Aurum" – gold, a reference to the colour of the beetle.

Notes

A relatively small, noticeably golden species with weakly concave hind edges to the metacoxal plates and relatively long, elongate, metatrochanters. Equally distinctive are the male genitalia which are unusually complex for Australian *Scirtes,* with fleshy parameroids and a small asymmetric, heavily chitinized, structure in the centre.

I have reared the species from larvae, also relatively golden, collected from among *Typha* in a shallow semi-permanent small lake. Adults were collected from the emergent rushes.

Specimens examined

Queensland. 2, Arriga via Mareeba, 16/10/85, K. N. Halfpapp, ex rice paddy, QPIM; 3, Cairns, 2/50, G. Brooks, ANIC; 1, Cardstone, 3 – 4/12/66, J. C. Brookes, ANIC; 1, Ingham, K. J. Sandery, 29/5/23, ANIC; 1, Christmas Creek, 15 K W of Fairview via Laura, 26 – 27/6/73, G. B. Monteith, QM; 1, Cow Bay N of Daintree, 18 – 25/1/84, I. C. Cunningham, QPIM; 1, 3mi SSW of Millaa Millaa, 30/10/68, R. J. Elder, ANIC; 2, Mossman, 8/1/84, at light, J. D. Brown, QPIM; 3, 2 mi SW of Mt Inkerman, 19 45S 147 30E, 11/12/68, S. Misko, ANIC; 7, 4mi W of Mourilyan, 5/11/66, sandy soil at light, E. Britton, ANIC; 5, Ditto, 11/66, G. Brooks, ANIC; 1, Pinnacle Village, 13/1/99, A. Podlussany, HUNG; 1, Rocky River via Coen, 10mi N, G. Monteith, UGIC Reg# 53654; 1,15km WNW South Johnstone, 9/5/86, at light, Fay & Halfpapp, QPIM; 2, Tolga, 10/1/86, at light, QPIM; 1,Walkamin, 15/3/84, at light, J D. Brown, QPIM. **Northern Territory.** 1, Berry Springs, 30km SSE of Darwin, 11/11/72, at light, E. Britton, ANIC; 3, 7km NW by N of Cahills Crossing, East Alligator River, 12, 23S 132.56E, 27/5/73, E. G. Matthews, ANIC; 1, 5 km NNW of Cahills Crossing East Alligator River, 12, 23S 132,57E, 28/5/73, E. G. Matthews, ANIC; 1, Cahills Crossing East Alligator River, 12 26S 132 58E, 29/5/73, at light, E. G. Matthews, ANIC; 1, Cannon Hill via Jim Jim, 18/8/71, T. Weir & A. Allwood, NTM; 1, Finniss River Station, 2/4/86, C. Wilson, ANIC; 2, Fogg Dam, 16/2/87, on Sida cordifolia, ANIC; 1, CSIRO HQ Kalpalga, 12.40S 132 22E, 19/6/79 (mv light), G. Monteith & D. Cook, QM; 1,10km N Jabiru, 21/9/82, R. I. Storey, at light, QPIM; 5, Jubiru, R. I. Storey, 17-20/9/82, QPIM.

Scirtes emmaae sp. nov.
(Figs 2, 3, 9)

Types
Holotype
male, "Cardstone QLD 15.xi.1966 J. G. Brooks", ANIC.

Paratypes
21; 1,"Qld. Bushland Beach 20km N Townsville, 23 – 30/12/97, A. J. Watts", SAMA; 1, "Cairns Q Dec 50 J.G. Brooks, NMV; 1, "Cape Tribulation, N. Qld. 24-29.xii.1980 R. I. Story & N. Gough Rainforest", QPIM; 4, "Cape Tribulation, N Qld. 8.1.1983, R. I. Story, at light" QPIM; 1, "Cardstone QLD 16.xi.1966 J. G.Brooks", ANIC; 1, "Cardstone QLD 19.xi.1966 J. G. Brooks", ANIC; 2, "Cardstone, N.Q. xi.66. K. Hyde", ANIC; 2, "Flying Fish Pt. 21/1/65 E. G. Dahms, QM; 3, "N.T. 12.35S 131.20E Kemp Airstrip Rainfor. 24 – 25 July 1979, G. Monteith & D. Cook", QM; 1, "Killymoon Ck. 25 k S Townsville Qld., 2.2.97, C. Watts", SAMA; 1, "AUSTRALIA Northern Territory Mt Bundey, 144m" 13 13 582S 131 08 018E, 4 – 6 xi 2000, leg. A. Podlussany", HUNG; 3, "AUSTRALIA 99.1.13 Queensland, Pinnocle village (camping) leg, A. Podlussany", HUNG.

Description (number examined, 107)

Habitus. Length 3.3 – 4.3 mm., relatively flat, oval.

Head. Reddish-yellow to dark reddish-yellow. Small, width between eyes about 2.2x dorsal width of eye. Strongly, densely and evenly punctate, each puncture with a long golden seta. Frons with front angles bulging outwards and may be slightly bent upwards, front edge straight or very weakly concave, edge strongly beaded. Segment 1 of antenna large, barrel-shaped; segment 2 about half as long, cylindrical, segment 3 as long as segment 2, narrower; segments 4 – 10 long, narrow, cylindrical; segments 10 and 11 subequal.

Pronotum. Reddish-yellow to dark reddish-yellow. Short, broad. Evenly and quite densely punctate, punctures moderately strong, confluent at sides, each with a long golden seta. Hind angles obtuse, front edge strongly sinuate, sides weakly beaded.

Scutellum. Reddish-yellow; a little longer than broad, lateral sides weakly convex.

Elytron. Reddish-yellow. Quite strongly and evenly punctate, each puncture with a yellow seta although often abraded off. Weakly flanged towards front. Epipleuron yellow, relatively wide in front quarter, becoming much narrower evenly over rest of elytron.

Ventral surface. Light reddish-yellow. Pronotal process very narrow between procoxae, apical portion not much wider, strongly keeled. Mesosternum with narrowly elongate groove for reception of pronotal process; tip reaching level of mesocoxae. Rear triangular midline extension of metasternum narrower than front extension; front extension about twice as wide as long. Metacoxal plate broader than long with anterio-lateral corner extending some way along metasternum; hind edge strongly concave; sides beaded; posteriolateral angles rounded. Metatrochanter small, apex pointed. Metafemur greatly swollen, widest just before middle, quite strongly indented on hind edge near apex. Dorsal metatibial spine relatively long, more than twice size of ventral spine and about two thirds length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; reticulation moderate, fine, more pronounced towards rear; apex of apical ventrite truncated or concave.

Male

No external difference between sexes. Basal piece of penis oval; trigonium a little shorter than basal piece, elongate, triangular, tip rounded; two similarly shaped parameroids, as long as trigonium (Fig. 9). Tegmen longer than penis, partially enclosing penis, lobes well separated with small triangular extensions on the outside near apex (Fig. 9).

Variation

Some specimens are uniformly reddish-yellow whereas the majority are darker towards the front.

Etymology

Named after my granddaughter Emma, whose father collected many of the specimens.

Notes

A relatively large species from tropical north and eastern Australia. Typical specimens are oval, reddish and with the colour becoming noticeably darker towards the front.

Broadly sympatric with the other two large reddish-yellow, elongate-oval species with concave hind margins to the metacoxal plates, *S. kaytae* and *S. tindaleensis*. *Scirtes tindaleensis* is more elongate and usually darker in colour; *S. kaytae* has upturned frons and asymmetric antennal segments and usually has dark regions towards the sides of the elytra. The male genitalia of all three species are very distinctive and even if only the tips are visible readily identify the species.

Additional specimens examined

Northern Territory. 1, Black Point Coburg Pen., 11 09S 132 09E, 15 – 23/2/77, T. A.Weir, ANIC; 1,

Berry Springs 30 km SSE Darwin 12 41S 130 58E, 11/11/72, at light, E. Britton, ANIC; 3, Casurina Beach 10km NNE Darwin 12 21S 130 42E, 22/10/72, E. Britton, ANIC; 4, Horn Isl, Pellew Group, 22 – 28 Feb.1968, B. Cantrell, UQIC Reg# 53670 – 1-2-3; 3, Howard Springs 24km S Darwin 12 28S 131 03E, 10/11/72, at light, E. Britton, ANIC; 3, Jim Jim Creek 19km WSW Mt Cahill 12 57S 132 33E, 24/10/72, at light, E. Britton, ANIC; 1, Kakadu np, Baroalba Springs 12 48'S 132 49E, 14.11.91, D.V. Wells, NTM; 1, Kakadu np Nourlangie Camp, 17-18/11/79, at light, M. B. MalipatiI, NTM; 1, Katherine, 25/I/73, T. Angeles & N. Forresyter, NTM; 4, Lee Point Darwin, 7/3/67, M. S. Upton, ANIC; 1, 4mi SW Lee Point Darwin, 6/3/67, M. S. Upton, ANIC; 2,15km E by N Mt Cahill 12 49S 132 51E, 29/ 10/72, at light, E. Britton, ANIC; 2, 16km E by N of Mt Cahill, 12 50'S 132 541E, 27/11/74, T. Weir & T. Angelas, NTM; 1, Smith Point. 3.8.82, C. Wilson & S. Collins, NTM; 2, Thorak Reserve via Berrimah, 28/11/74, A. Allwood, ex light trap, NTM. **Queensland.** 5, Annan R 3kmW by S Black Mountain 15 41S 145 12E, 26 – 17/4/81, A. Calder, ANIC; 1, Babinda, 9/37, ANIC; 1, Bueasia, K.J. Sandry, 20/2/93, ANIC; 1, Cairns, 12/1/35, ANIC; 2, ditto, 2/50, J. G. Brooks, ANIC; 1, Ditto, NMV; 1, 1km W Cooktown 15 28S 145 15E, 12 – 13/5/81, A. Calder, ANIC; 1, Cairns, 6/1966, A. MaeQueen, UQIC Reg# 53727; 1, Edge Hill Cairns, 23 – 24/2/65, at light, J.G. Brooks, ANIC; 1, Ellis Beach 25km NNW Cairns 16 44S 145 39E, 19/5/76, E.B. Britton, ANIC; 4, Cow Bay N of Daintree, Jan-Feb 81, I. C. Cunningham, QPIM; Christmas Creek 15km W of Fairviews via Laura, 26 – 27/6/75, G. B. Monteith, QM; 1, Jardine R. Crossing 29km S Bamiga, 5/9/85, light trap, E. N. Marks, ANIC; 1, Innisfail, 25.I2.59,V. Skablum, UQIC Reg# 53721; 1, Iron Range 11 – 17/5/68, G.Monteith, UQIC Reg# 53694; 2, ditto exeept 16 – 23.11.65,UQIC Reg# 53686/7; 1, Granite Gorge via Marreeba, 21/1/89, R I Storey, at light, QPIM; 1, Iron Range, 26 – 31/10/99, Wood, Dunn & Hasenpuseh, QPIM; 1, Jullatten, 18/11/86, Malaise trap, A. Walford-Huggins, QPIM; 1, Lankelly Creek, MeIIlwraith Rngs. nr. Coen, 28-32/10/69, B. Cantrell, UQIC Reg# 53661; 2, Marina Plains via Musgrave, 17/11/82, Storey, Brown & Jaeobson, QPIM; 1, Mossman, 11/1/84, at light, J. D. Brown, QPIM; 1, 1km S Mt Cook I5 30S 145 16E, 13/10/80, T.Weir, ANIC; 1, 2mi. SW Mt Inkerman 19 45S 14730E, 11/12/68, S. Misko, ANIC; 4, 9km ENE Mt Tozer 12 43S 143 17E, 5 – 10/ 7/ 86, T. Weir & A. Calder, ANIC; 3,11km ENE Mt Tozer I2 43S 143 18E, 11-16/ 7/86, T. Weir & A. Calder, ANIC; 1, 3 km NE Mt Webb 15 03 S 145 09E, 3/5/81, A. Calder, ANIC; 1, 2km NE by E Mt Tozer 12 44S 143 13E, 1/7/86, A. Calder, ANIC; 2, 3km ENE Mt Tozer 12 44S 143 14E, 28/6/86, T. Weir & A. Calder, ANIC; 2, N Queensland, SAMA; 1,11km WSW Petford, 21/8/1/88, at light, R. Storey, QPIM; 1, 32km S Ravenshoe 17 38S 145 29E, 13/2/66, K Hyde, ANIC; 2, Rocky River 10mi. N.17.2.46, G. Monteith, UQIC Reg# 53653/56; 7,15km WNW South Johnstone, 10/12/85, at light, Fay & Halfpapp, QPIM; 1, South Johnstone, I2/79, at light, B. Pinese, QPIM; 2, Split Rock 14km S of Laura, 23 – 26/6/75, G. B. Monteith, QM; 1, Yorkeys Knob, 17/8/63, B. V. Timms, UQIC Reg# 53723; 3, 9km SE Yeppoon, 20-30/10/75, I.F.B.Commom, ANIC.

Scirtes exoletus Waterhouse, 1880
(Fig. 10)

Type
Holotype
female, "W Austral" "Scirtes exoletus (Type) C. Waterh.", NHM. Seen.

Description (number examined, 59)

Habitus. Length 3.5 – 5.0 mm., relatively flat, oval.

Head. Yellowish, rear and Y-shaped suture often brown; antennae light to dark reddish-yellow, distal portion of each segment lighter. Small, width between eyes about 2.4x dorsal width of eye. Evenly punctate, punctures relative large, each with a moderately sized golden seta. Frons with sides slightly diverging, front edge straight or very weakly coneave, edges weakly beaded. Segment 1 of antenna large, curved; segment 2 smaller, barrel-shaped; segment 3 smaller and narrower; segments 4 - 10 long, narrow, eylindrieal; segment 11 a little longer than segment 10, all segments setose.

Pronotum. Yellowish with brown pattern. Short, broad. Evenly and moderately to quite strongly punetate, each puneture with a moderately long golden seta. Hind angles obtuse, front edge sinuate, sides weakly beaded.

Scutellum. Yellowish, usually lighter than elytra, slightly longer than wide, lateral sides eonvex.

Elytron. Yellowish to light reddish-yellow, often a little darker near base and side. Side weakly and narrowly flanged. Moderately to strongly and evenly punetate, each puneture with a yellow seta. Epipleuron relatively wide in front quarter, beeoming narrower over rest of elytron, front portion weakly to moderately coneave.

Ventral surface. Light reddish-yellow. Pronotal proeess very narrow between proeoxae, apieal portion not mueh wider. Mesosternum with broad, flat, diamond shaped area in midline in front to reeeive prosternal proeess; rear tip reaching just reaching front of mesoeoxae. Front extension of metasternum in midline, short, widely triangular;

rear midline extension of metasternum about twice as wide as long; approximately equilateral. Metacoxal plate about as long as wide, with anteriolateral corner extending some way along mesosternum; hind edge straight or sightly convex, sloping towards midline; sides strongly beaded; posteriolateral angles rounded. Metatrochanter small, about 2.0x as long as wide. Metafemur moderately swollen, widest about middle, small notch on hind edge near apex. Dorsal metatibial spine relatively short, about twice size of ventral spine and about half length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites slightly rugose with moderate punctures and fine reticulation, more pronounced towards rear; apex of apical ventrite truncated.

Male

Little external difference between the sexes. Basal piece of penis broad, rounded; trigonium about same length, triangular, apex rounded; single parameroid robust, simple, as long as trigonium (Fig.10). Tegmen about half-length of penis, with broad lobes, not or only slightly separated near apex, partially wrapping around penis, apical edges with short spines (Fig.10).

Notes

A relatively large, flat, distinctive species, recognised by its yellow/grey colour with clear darker mottlings on the pronotum and head and a relatively short metatibial spine. It shares with *S. macroconcolor* and *S. interstinctus* the shallowly grooved elytral epipleura and straight edges to the metacoxal plates, but *S. macroconcolor* is uniformly coloured with a more strongly flanged elytra and *S. interstinctus* has dark stripes on the elytra, flanged elytra, usually stronger and less dense punctures and the hind edges of the metacoxal plates do not slope inwards as they do in *S. exoletus*. The male genitalia of the three species are distinct.

Scirtes exoletus has an unusually wide distribution, occurring in all States except South Australia. I have collected its large dark larvae from submerged leaf litter at the edge of drying pools in the Pilbara and from among emergent vegetation in farm dams in Victoria and northern Tasmania.

Specimens examined

Queensland. 1, Boar Pocket rd. 8km N of Gillies Hwy., 21/2/70, J. G. Brooks, ANIC; 1, Colossum Creek, 10mi. S Miriam Vale, 20/12/66, B. Cantrell, UQIC Reg# 53665; 3, Davies Creek 22km WSW Mareeba, 6/11/84, Storey & Halfpapp, QPIM; 2, Danbulla via Yungaburra, 13/11/92, at light, Storey, De Faveri & Huwer, QPIM; 1, 7km N Hope Vale Mission, 4/10/80, T. Weir, ANIC; 1, Kenilworth State Forest, 1/4/69, B. Cantrell, UQIC Reg# 53660; 1, 7.5km NNW Kuranda, 20/11/82, Storey & Halfpapp, QPIM; 1, 13km W Kuranda, 7/12/82, J.T. Doyen, ANIC; 1, 8km W Kuranda, 28/12/86, H & A Howden, malaise trap, QPIM; 1, Lake Eacham, 16/12/82, J. T. Doyen, ANIC; 1, Mary Creek 16 33S 145 12E, 5/12/68, at light, Britton & Misko, ANIC; 1, Mt Tambourine, A. M. Lea, SAMA.;1, 3km ENE Mt Tozer, 28/6/86, D. H. Colless, malaise trap, ANIC; 1, 7km NE Tolga, 2/87, Storey, & De Faveri, QPIM; 2, Whitfield rd. 22km from Cairns, 21/10/71, J. G. Brooks, ANIC. **New South Wales.** 2, Collector, 2/61, C. Watts, SAMA; 1, Epping, 4/3/87, malaise trap, 1. Buddie, ANIC; 1, Harrington, 8/9/83, G. Williams, ANIC; Tooloom Plateau Via Woodenbong, 30 – 31/12/66, G. Monteith, UQIC Reg# 53714; 1,Wingham Scrub 31 52S 152 22E, at light, 3/1/70, Britton, Holloway & Misko, ANIC. **Northern Territory.** 1, McArthur River 16,47S 135 45E 14km S by W Cape Crawford, 25/10/75, M. S. Upton, ANIC; 1, Ditto, 6/11/73, ANIC; 1, Nourlangie Creek 8km E of Mt Cahill, 7/5/75, A. Allwood & T. Angeles, NTM. **Tasmania.** 4, 4 km W Port Latta, 27/11/00, C. Watts, SAMA. **Victoria.** 8, Healsville, 12/68, C. Watts, SAMA; 1, Thomson River Bells clearing, 8 March 1970, MV light, NMV; 2, Tullamarine, 4/9/75, SAMA; 1, 2 km E Warburton, 14/1/97, C. Watts, SAMA. **Western Australia.** 3, Crossing Pool Millstream 21 35S 117 04E, E. B. Britton, ANIC; 1, Deep Reach Millstream 21 35S 117 04E, at light, E. B. Britton, ANIC; 1, Millstream Fitzroy Crossing area, 17/3/83, K. & E. Carnaby, ANIC; 5, Hammersly Range, W. D. Dodd, SAMA; 9, ditto, at light, 30/10/70, E. Britton, ANIC; 5, Millstream, Coll Ranger, Summer 2000, SAMA; 2, 1 km N Millstream, 1 – 4/71, M. S. Upton, ANIC.

Scirtes interstinctus sp. nov.
(Fig. 11)

Types

Holotype

male: "15.30S 145.16E 5 km SEbyS Cooktown QLD 19 May 1977". F.B. Common & E.D. Edwards", ANIC.

Paratypes

12; 4, "Dividing Range 15 km W of Captain Billy Creek Cape York Pen, N.Qld. 142 45E 11 40S 4-9 vii. 1975 G. B. Monteith", QM; 1," AUSTRALIA n QLD Davies Ck 22 km WSW of Mareeba Malaise T 2. xii. 1984 Storey & Titmarsh", QPIM; 1, Ditto, 2. x.-6 xi 1984 Storey & Halfpapp", QPIM; 1, Ditto "2 xii – 21.xii 1984 Storey & Brown", QPIM; 1, "15.14S 145, 07E 7 Km N of Hope Vale Mission QLD 4 Oct 1980 T. Weir", ANIC; 1, "8 Km W

Kuranda NQ 28 Dec.1986 H & A Howden Malaise trap", ANIC; 1, "12.44S 143.14E 3 K ENE Mt Tozer 28 June – 4 July 1986 D. H. Colless Malaise trap", ANIC; 1, "NEQ 17 19S 145 37E Peeramon Scrub 750m 9 Dec 1995 G. Monteith Pyrethrum trees", QM.

Description (number examined, 13)

Habitus. Length 3.8 – 4.7 mm., relatively flat, oval.

Head. Reddish-yellow with darker markings; antenna reddish-yellow. Small, width between eyes about 2.5x dorsal width of eye. Evenly punctate, punctures relative large, each with a moderate sized golden seta. Frons with sides slightly diverging, front edge straight or very weakly concave, edges weakly beaded. Segment 1 of antenna large, curved; segment 2 smaller, barrel-shaped; segment 3 smaller and narrower; segments 4 - 10 long, narrow, cylindrical; segment 11 about same length as segment 10, all segments setose.

Pronotum. Light reddish-yellow with dark brown pattern. Short, broad. Punctures large, relatively shallow, moderately dense, each puncture with a moderately long golden seta. Hind angles obtuse, front edge sinuate, sides weakly beaded.

Scutellum. Yellowish, usually lighter than elytra, slightly wider than long, lateral sides convex.

Elytron. Light reddish-yellow, with darker stripes sutural region narrowly yellow. Side moderately to quite strongly flanged in front half; evenly punctate with relatively large shallow punctures, each puncture with a yellow seta. Epipleuron relatively wide in front quarter becoming narrower over rest of elytron, front portion weakly to moderately concave.

Ventral surface. Light reddish-yellow. Pronotal process very narrow between procoxae, apical portion not much wider. Mesosternum with broad, flat, diamond shaped area in midline in front to receive prosternal process; rear tip reaching past front of mesocoxae. Front extension of metasternum in midline, short, widely triangular; rear midline extension of metasternum about twice as wide as long. Metacoxal plate about as long as wide, with anteriolateral corner extending some way along metasternum; hind edge sightly sinuate; sides beaded; posteriolateral angles rounded. Metatrochanter small, elongate, about 2.5x as long as wide. Metafemur moderately swollen, widest about middle, small notch on hind edge near apex. Dorsal metatibial spine about twice size of ventral spine and about half-length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites slightly rugose with moderate punctures and fine reticulation, more pronounced towards rear; apex of apical ventrite truncated.

Male

Little external difference between the sexes. Basal piece of penis short, broad, rounded; trigonium about twice as long as broad, spatulate with raised ridge at base; single parameroid robust, a little longer than half length of trigonium, apex hooked (Fig. 11). Tegmen shorter then penis, lobes short, slightly asymmetrical, apical edges with short spines, strongly wrapped around penis (Fig. 11).

Variation

The extent of the brown stripes on the elytra is variable; in some they are reduced to the base and some scattered markings elsewhere on elytra. The colour of the antennal segments varies from nearly uniform yellowish to quite dark with much lighter distal portions.

Etymology

Latin. "Interstinctus" – variegated, a reference to the dorsal colour.

Notes

A relatively large species recognised by its distinct darker mottlings on the pronotum and head and short linear markings on the elytra, relatively large shallow punctures and flanged elytra. It shares with *S. exoletus* the shallowly grooved elytral epipleurae, patterned head and pronotum and straight edges to the metacoxal plates but has linear markings on the elytra, more strongly flanged elytra, generally larger punctures and quite different male genitalia.

Most specimens have been captured in Malaise traps, none at light, which is a different pattern than other *Scirtes* which may indicate a somewhat different natural history.

Scirtes kaytae sp. nov.
(Fig. 12)

Types

Holotype

male, "Qld. Bushland Beach 20km N Townsville A. J. Watts 15 – 20/3/98", SAMA.

Paratypes

37; 21, "Qld. Bushland Beach 20km N Townsville A. J. Watts 23 – 30/12/97", SAMA; 10, ditto, "at light 16 – 18 Jan 1998", SAMA; 3, ditto 6 – 11/98, SAMA; 2, ditto, 26-29 Feb1998, SAMA; 1, ditto, 28/3/98, SAMA.

Description (number examined, 249)

Habitus. Length 3.9 – 5.5 mm., relatively flat, oval.

Head. Reddish-yellow. Small, width between eyes about 3x dorsal width of eye. Strongly, densely and

evenly punctate. Frons with front angles bulging outwards, front edge straight or very weakly concave, front bent upwards, edge beaded. Segment 1 of antenna large, barrel-shaped; segment 2 about half as long, oval; segment 3 as long as second but narrower; segments 4 – 10 long, narrow, tending to be more expanded on front edge, particularly central ones; segment 11 and segment 10 subequal.

Pronotum. Reddish-yellow; short, broad. Evenly and quite densely punctate, punctures confluent at sides, each with a long golden seta. Hind angles obtuse, front edge strongly sinuate, sides weakly beaded.

Scutellum. Reddish-yellow; about as long as wide, lateral sides weakly convex.

Elytron. Reddish-yellow with diffuse darker areas towards sides and front. Quite strongly and evenly punctate, each puncture with a yellow seta although often abraded off. Weakly flanged towards front. Epipleuron yellow, relatively wide in front quarter, evenly becoming much narrower over rest of elytron.

Ventral surface. Reddish-yellow, often with diffuse darker areas. Pronotal process very narrow between procoxae, apical portion not much wider, strongly keeled. Mesosternum with narrowly elongate groove for reception of pronotal process; tip reaching to level of mesocoxae. Rear triangular midline extension of metasternum approximately same size as front extension; about twice as wide as long, edge beaded. Metacoxal plate broader than long with anteriolateral corner extending some way along metasternum; hind edge strongly concave; sides beaded; posterior-lateral angles rounded. Metatrochanter very small, apex pointed. Metafemur greatly swollen, widest just before middle, quite strongly indented on hind edge near apex. Dorsal metatibial spine relatively long more than twice size of ventral spine and about two thirds length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; reticulation moderate fine, more pronounced towards rear; apex of apical ventrite truncated or concave.

Male

Basal piece of penis elongate oval; trigonium about as long as basal piece, a small sharp hook at apex; single parameroid a little shorter than trigonium, narrow, slightly curved towards tip which is sharply pointed (Fig.12). Tegmen about as long as penis, lobes narrow, well separated, with row of quite strong spines on outside edge (Fig.12). Front of frons more strongly upturned; antenna stouter with expansions on inside of antennal segments greater than in female.

Variation

There is considerable variation in the strength of the colour pattern on the elytra from almost uniformly reddish-yellow to reddish yellow with almost black markings on shoulders and each elytron with a broad dark stripe near but not quite reaching the sides. The strength of the shovel-like upturned frons of the male (and weakly in some females) is quite variable as are the internal expansions of the antennal segments.

Etymology

Named after my granddaughter Kayt whose father collected many of the specimens.

Notes

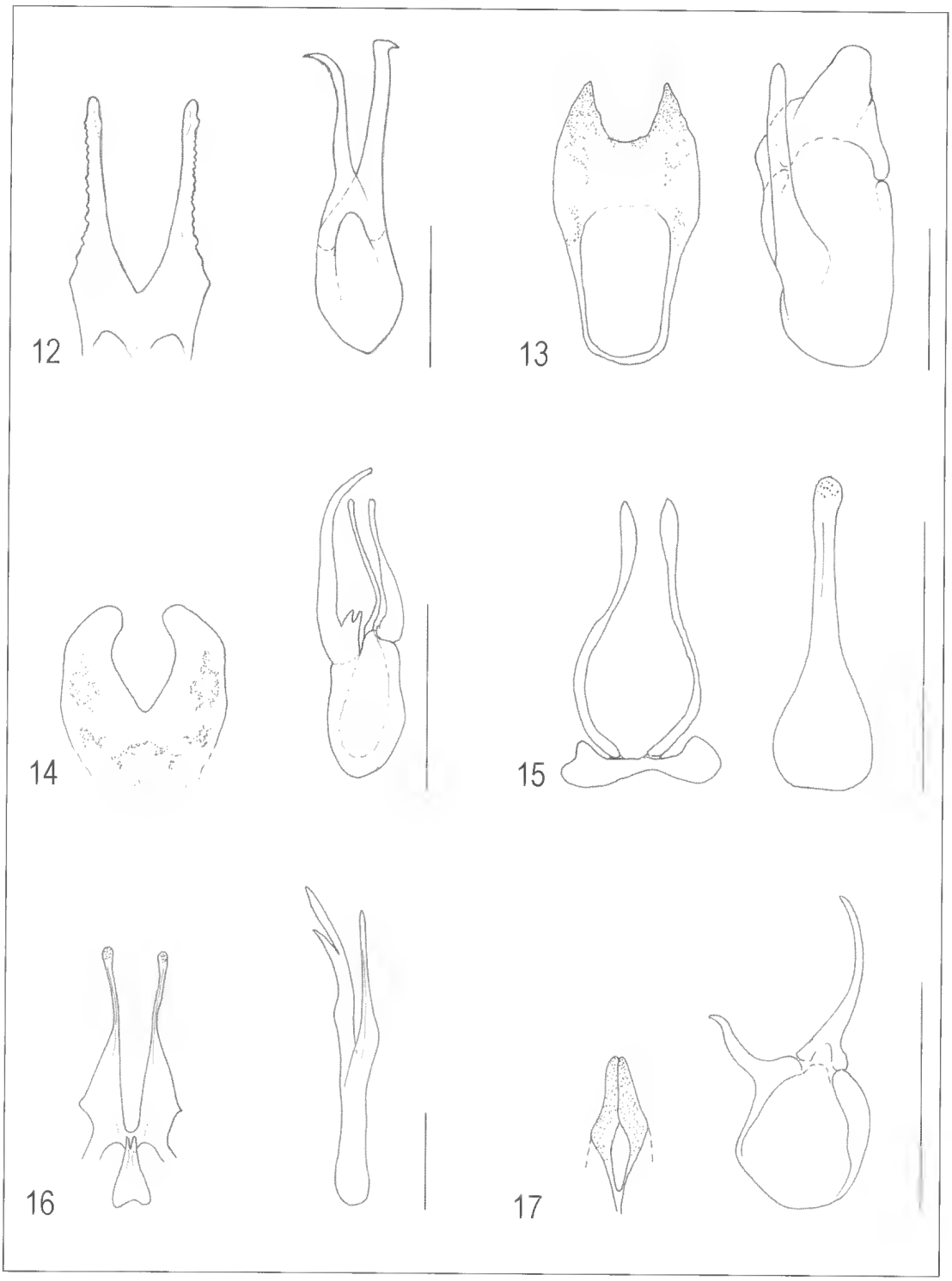
A large, common species in tropical north and eastern Australia, reddish but usually with noticeably darker areas on the elytra. The males are very distinctive with stout antennae with the inner portions of the individual segments enlarged slightly on the insides and frons with front edge projecting forwards and upwards. These characters are much less obvious in the females. The male genitalia are distinctive for the spines on the outer margin of the tegmen and hooked tip to the penis which is often visible in preserved specimens.

Broadly sympatric with the two other large reddish-yellow oval species with concave hind margins to the metacoxal plates, *S. emmaae* and *S. tindaleensis*. Both of these are more uniform in colour without the lateral darker markings on the elytra and lack the asymmetric antennal segments and the upturned frons of *S. kaytae* as well as clear differences in the male genitalia. Could also be confused with the rarer *S. ruforotundus*, a more rounded, dark reddish species, often with the disc of the elytra lighter and with normal frons and thin antennae. The male genitalia of *S. ruforotundus* are very different, and never protrude from the abdomen.

The large black larvae occur among emergent vegetation in seasonal swamps.

Specimens examined

Queensland. 1, Archers Creek Mt Garnet Rd., 28/12/64, J. G. Brooks, ANIC; 1, Ayr 19 35S 147 24E, 30/11/70, W. B. Muir, ANIC; 1, Big Mitchell Ck. Mareeba-Molloy Road, 4/5/67, D. H. Colless, ANIC; 1, Bundaberg 24 51S 152 21E, 14/3/72, Frauca, ANIC; 1, Bundaberg, 20/2/72, H. Frauca, ANIC; 22, ditto, 14/4/63, C. Watts, SAMA; 1, Bundaberg, SAMA; 5, ditto, 25 – 26/ 3/ 84, K. H. Halfpapp, at light, QPIM; 5, Cairns, 2/50, G. Brooks, ANIC; 1, Calliope River 23km SE Gladstone 23 50S 152 13E, 23/1/70, light trap, S. Misko, ANIC; 2, Cape Pallarenda 19 14S 146 46E, 14 – 17/1/74, at light, R. A.Barrett, ANIC; 1, Carr Creek 18km NNW



Figs 12-17. Dorsal views of tegmen (left) and penis (right). Lines = 0.5 mm. 12. *Scirtes kaytae* sp. nov. 13. *S. macroconcolor* sp. nov. 14. *S. microrotundus* sp. nov.15. *S. ruforotundus* sp. nov.16. *S. tindaleensis* sp. nov. 17. *S. alastairi* sp. nov.

Mareeba, 21/5/80, I.D. Nauman, ANIC; 10, Cemetry Point Veron via Maryborough, 24/12/70, I. F. B. Common, ANIC; 4, Gordonvale, 1/15/99, A. Podlussany, HUNG; 1, Gin Gin, 2/4/62, C. Watts, SAMA; 5, Giru,18/4/81, B.B. Lowery, at light, ANIC; 1, Kalpower Crossing 75km NW Laura, 2/4/83, at light, R. I. Storey, QPIM; 1; 1, 70km SW Greenvale, at light, 1-10/ 3/95, A. J. Watts, SAMA; 1, Mango Island off Millaroo, 13/3/74, J. H. Barrett, QPIM; 5, Marina Plains via Musgrave, 10/5/83, Storey & Brown, QPIM; 2, N Queensland, Blackburn Coll, SAMA; 22, 30km N Marlborough, at light, 24/11/81 Hangay, Herozeg & Vojnite, HUNG; 1, Mossman, 8/1/84, J. Brown, at light, QPIM; 6, Normanton, 4/5/63, at light, P. F. Aitkin & N.B. Tindale, SAMA; 2, Old Laura Station 28km N Laura, 3/4/83, at light, R.I. Storey, QPIM; 2, Ingham, 16/2/60, K. I. Harley, ANIC; 5, ditto, 6/3/84, K. H. Halfpapp, at light, QPIM; 1, ditto, SAMA; 1, Iron Range, 5/71, J. Brooks, ANIC; 16, Lansdown Station 7km S of Woodstock 19 40S 146 51E, 16.1.74, at light, RABarrett, ANIC; 2, Pistol Gap Byfield 22 50S 150 40E, 10/1/70, at light, Britton Holloway & Misko, dry sclerophyll, ANIC; 3, 2km S Ravenshoe 17 38S 145 2E, 13/2/66, K. Hyde, ANIC; 1, Tolga, 2 – 3/80, N. Gough & J. D. Brown, QPIM; 2, 7km N Tolga, 3/88, Storey & De Favers, QPIM; 1, ditto, 1/88, QPIM; 5, Townsville, F.H. Taylor, ANIC; 4, ditto, 12/3/58, K. L. Harley, ANIC; 9, ditto, 1/16/68, P. Ferrar, ANIC; 2, Stuart Range, 1 – 2/27, Hale & Tindale, SAMA; 1, Waterfall Creek 20ml N. of Rollingstone, 29.3.73, A. Allwood & T. Angeles, NTM; 2, Woodstock, 3/54, A. J. Brooks, ANIC; 1, Yeppoon, 14 – 18/12/64, I. F. Common & M. S. Upton, ANIC; 1, Yeppoon, 30/1/70, I. F.B. Common, ANIC. **Northern Territory**. 7, Bessie Springs 8km ESE Cape Crawford 16 40S 135 51 E, 12/4/76, at light, J. E. Feehan, ANIC; 7, Batten Point 30km NE by E Borroloola 15 54S 136 32E, at light, 18/4/76, J. E. Feehan, ANIC; 1, 22km WSW Borroloola, 16/4/76, at light, J.E. Fechan, ANIC; 1, Edge Hill, 4/64, J Brooks, ANIC; 1, Cahills Crossing East Alligator River 12 26S 132 58E, 29/5/73, at light, E. G. Matthews, ANIC; 1, 5km NNW Cahills Crossing East Alligator river 12 23S 132 57E, 28/5/73, E. G. Matthews, ANIC; 1, Darwin River 16km SW by S of Noonamah 12 44S 130 58E, 16/5/74, T. Angeles & W. Mollah, NTM; 2, Jasper Gorge 54km NW of Victoria River Downs 16 02S 130 41E, 30.4.74, T. Weir & T. Angeles, NTM; 1, 10km SW Jabiru, 29/1/99, C. Watts, SAMA; 3, Katherine, at light, 6 – 10/2/68, J. A. L. Watson ANIC; 1, Katherine, 23/1/71, T. Weir & A. Allwood, NTM; 2, Koongarra 12 52S 132 50E, 6 – 10/3/73, M. S. Upton, ANIC; 1, Lee Point Darwin, 8/3/67, M. S.Upton, ANIC; 1, Melville Isl., at light, 4/2/68, Matthews, ANIC; 5, McArthur River 14km SW Cape Crawford 16 47S 135 45E, 11/4/76, J. E. Feehan, ANIC; 2, Magela Creek 1km NNW Mudginberry HS 12 36S 132 52E, 25/5/73, Matthews & Upton, ANIC; 2, McArthur River 14km SW of Cape Crawford 16 47S 135 45E, 11/4/76, J. F. Feehan, ANIC; 1, October Creek on Borroloola Road, 7/4/76, T. Weir, NTM; 3, Roper River, 6/4/76, T. Weir, NTM; 1, Smith Point, 23/2/81, A. Allwood, NTM; 1, Tortilla flats, 3.3.82, J, Waldock, NTM; 1, Tindale 14 31S 132 22E, 20/12/67, W. J. M. Vestjens, ANIC; U.A.R. 21/2/67, C.S.Li, NTM; 1, Victoria River crossing 15 36S 131 07E, 29/4/74, T. Weir & T. Angeles, NTM; 1, Wildman River Cashew project, 3/1/89, Malipatil & Houston, QPIM. **Western Australia**. 2, 8km S Cape Bertholet West Kimberley 17 19S 122 10E, 21/4/77, D. H. Colless, ANIC; 5, 3km S Coulomb Pt. West Kimberley 17 32 122 09E, 20/4/77, D. H. Colless, ANIC; 2, Fitzroy River, 11/4/84, at light, K. & E. Carnaby, ANIC; Kununurra, 27/12/82, R. I. Storey, QPIM; 6, Kununurra, 17-21/ 2/ 68, E. Matthews, ANIC; 1, 6km W Martin's Well West Kimberley 16.08S 122 48E, 25/4/77, D. H. Colless, ANIC; 3, Ord River Valley Kimberley Res. Station, 9/3/82, E.S.C. Smith, ANIC.

Scirtes macroconcolor sp. nov.
(Fig.13)

Types

Holotype

male; "14 49S 126 49E Carson escarpment W.A. 9 – 15 Aug.1975 I. F. Common and M.S. Upton", ANIC.

Paratypes

7; 1 slide, as for holotype, SAMA; 1, "Bessie Springs 16 40S 135 51E 8 km ESE Cape Crawford NT. 26 Oct. 1975 M. S. Upton", ANIC; 1, "nr. Katherine, NT 21 May 1992 P. S. Cranston & P. J. Gullan coll.", ANIC; 1,"15 02S 126 55E Drysdale River, W.A. 3 – 8 Aug.1975 I. F. B. Common and M. S. Upton", ANIC; 3, "N.T. U.D.P. Falls 18 – 19 Jul 1980 M.V. Light M.B. Malipatill" NTM.

Description (number examined, 8)

Habitus. Length 4.5 – 4.8 mm., relatively flat, oval.

Head. Light reddish-yellow. Eyes large, width between eyes about 2.3x dorsal width of eye. Moderately and evenly punctate. Frons with sides moderately diverging, front edge weakly concave, front corners slightly downturned, edges weakly beaded. Segment 1 of antenna large, barrel-shaped; segment 2 about two-thirds length of segment 1, oval; segment 3 about half length of segment 2,

narrower; segments 4 – 10 long, relatively wide, parallel sided, becoming progressively flatter; segment 11 about same size as segment 10.

Pronotum. Light reddish-yellow. Short, broad. Evenly and moderately to quite strongly punctate, each puncture with a moderately long golden seta. Hind angles obtuse, front edge strongly sinuate, sides weakly beaded.

Scutellum. Light reddish-yellow. A little longer than wide, lateral sides convex.

Elytron. Light reddish-yellow to reddish-yellow, sutural region narrowly lighter. Sides quite broadly flanged, more strongly in middle. Moderately to strongly and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide in front quarter becoming narrower over rest of elytron, front portion shallowly grooved.

Ventral surface. Uniformly light reddish-yellow. Pronotal process very narrow between procoxae, apical portion a little wider. Mesosternum with diamond shaped groove in midline in front for reception of pronotal process; rear tip reaching just to front of mesocoxae. Front extension of metasternum in midline, small, short, triangular bordered behind; rear midline extension of metasternum about as wide as long; approximately equilateral, tip reaching to about middle of metacoxal plate. Metacoxal plate about as wide as long, with anterio-lateral corner extending some way along metasternum; hind edge straight, sloping slightly to midline; sides very weakly beaded; posteriolateral angles rounded. Metatrochanter small about 2.0x as long as wide. Metafemur greatly swollen, widest about middle, small notch on hind edge near apex. Dorsal metatibial spine about twice size of ventral spine and about two-thirds length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites slightly rugose, moderately punctate, reticulation fine, more pronounced towards rear; apex of apical ventrite truncated.

Male

Little external difference between sexes. Basal piece of penis large, oval; trigonium shorter, squatly triangular, apex rounded; parameroid large, thumb-like, broad in lateral view, narrow in dorsal view (Fig. 13). Tegmen a bit shorter than penis, lobes short, conical, well separated (Fig. 13).

Variation

Some specimens have diffuse darker areas on the elytra and vague darker patterning on the pronotum.

Etymology

Latin. "Macro" – large; "concolor" – uniform colour.

Notes

A moderately sized species with uniform colour, straight hind edges to the metacoxal plates, weakly grooved epipleuron and a noticeably flanged elytra.

Scirtes microrotundus sp. nov.
(Fig. 14)

Types

Holotype

Male; "Mossman Gorge, N. Qld. 23 Apr. 1967 D. H. Colless", ANIC.

Paratypes

3 slides, as for holotype, 2 ANIC, 1 SAMA.

Description (number examined, 4)

Habitus. Length 2.0 mm., flat, round.

Head. Dark brown, Small, width between eyes about 2.7 x dorsal width of eye. Moderately and evenly punctate, each puncture with a moderate sized pale seta. Frons with sides strongly diverging, front edge concave, edges beaded. Antenna reddish-yellow, lighter towards base; segment 1 of antenna large, barrel-shaped; segment 2, barrel-shaped about three quarters size of segment 1 in both width and length; segment 3 smaller about two thirds length of segment 2 and narrower; segments 4 – 10 long, cylindrical; becoming a little flatter apically, segment11 a little longer than segment 10.

Pronotum. Dark chestnut, extreme margins lighter. Short, broad. Evenly and moderately punctate, each puncture with a moderately long golden seta. Front angles weakly extended; hind angles obtuse; sides weakly beaded, weakly upturned.

Scutellum. Dark reddish-yellow; sides broad, slightly wider than long, lateral sides weakly convex.

Elytron. Dark reddish-yellow. Sides weakly flanged towards front. Moderately to strongly and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide in front quarter becoming narrower over rest of elytron, front portion widely and shallowly grooved.

Ventral surface. Dark reddish-yellow, appendages tending lighter. Pronotal process very narrow. Mesosternum with short, shallow, relatively broad, triangular groove for reception of pronotal process; tip just reaching to level of mesocoxae. Front extension of metasternum relatively small, broadly triangular, rear midline extension of mesosternum relatively long, about 1.5x as wide as long. Metacoxal plate wider than long, with anterio-lateral corner extending some way along metasternum; hind edge straight or weakly sinuate, sloping towards midline; midline of coxae short, shorter than length of metasternal extension; sides beaded; posteriolateral angles rounded. Metatrochanter

small, elongate, about 2.4x as long as wide. Metafemur moderately swollen, widest about middle. Dorsal metatibial spine moderately long about twice size of ventral spine and about two-thirds length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; reticulation moderate, fine, more pronounced towards rear; apex of apical ventrite truncated or weakly concave.

Male

Only males known. Basal piece of penis, oval; trigonium formed of two long thin pieces one broader than the other; single parameroid longer and thinner than trigonium lobes, apex pointed, small bifid structure near its base (Fig. 14). Tegmen about half length of penis, lobes broad, well separated (Fig. 14).

Variation

Little variation in the four known specimens.

Etymology

Greek. "Mikros" – small. Latin "rotundus" – round.

Notes

A small dark, almost round species with short metacoxal plates, weakly concave epipleura and distinctive male genitalia.

Scirtes ruforotundus sp. nov.
(Figs 2, 15)

Types

Holotype

male, "15.30S 145 16E 1 km SE of Mt Cook Qld 13 Oct. 1980 T. Weir", ANIC.

Paratypes

28; 1, "Brandy Cr 8 mi. NE Proserpine Q (20 20S 148 41E) 1.xii.1968 at light Britton & Misko", ANIC; 1, 'Cairns 5/49 J. G. Brooks', ANIC; 1, '16 03S to 16.05S QLD145 28E Cape Tribulation 21 – 28/3/84 A. Calder & T. Weir', ANIC; 1 slide, Cape Tribulation NQ 14 – 17 Jul. 1982 S & J Peck coll, SAMA; 1, "Cardstone Qld 20/11/66 K. Hyde", ANIC; 1, "Cooper Creek, 18ml. N. of Daintree River, N. Qld. 21 – 22.vi.1969 G.B.Monteith" "UQIC Reg# 53713", UQIC; 1, "Crystal Ck. Q., 23 mi. SSE Ingham 19 58S 146 16E, 9/12/68 at light Britton & Misko", ANIC; 2, "Gap Ck., 6ml. N of Bloomfield R. N. Qld. 13.xi. 1965 G. Monteith" "UQIC Reg# 53643/4", UQIC; 1, "15 12S 143 52E Hann R. 73 km NW by W Laura Qld. 27 June 1986 T. Weir & A. Calder", ANIC; 3, "15 16S 144 59E 14 km W by N of Hope Vale Mission Qld. 8 – 10 Oct 1980 T. Weir", ANIC; 1, "15.14S 145. 07 E 7 km N of Hope Vale Mission Qld. 4 Oct 1980 T. Weir", ANIC; 1, "Iron Range Cape York Pen. N. Qld. 11 – 17 May 1968 G. Monteith" "UQIC Reg# 53693", UQIC; 2, "Iron Range Cape York Pen. N. Qld. 16 – 23.xii.1965 G. Monteith" "UQIC Reg# 53690/1". UQIC; 1, "Mackay", SAMA; 1, "Mitchell River Settlement, Qld. 4 iv.70 A. L. Dyce (From large open cavity 6' above ground level in mango tree)" ANIC; 2, "9 km SW Madang PNG 1.ii.1988 bamboo internode B 18 R. Kitching", ANIC; 1, "W of KOWI Madang PMG 3.ii.1989 TH24/R Kitching", ANIC; 3, "Miller's Crossing, 30mls N. of Cooktown N.Qld. 24-25.xi.1965, G. Monteith" UQIC Reg# 5384/4/5"; 2, "15 30S 145 16E 1 km SE Mt Cook Qld 13 Oct 1980, T. Weir", SAMA; 1, "N. Queensland", SAMA; 3, "15 05S 145 07E Mt Webb Nat Pk. QLD 28 – 30 Sept 1980 T. Weir", ANIC; 1, "12 44S 143 14E 3 km ENE Mt Tozer 28 Jun – 4 Jul. 1986, T. Weir & A. Calder" ANIC; 1, "15.03S 145. 09E 3 km NE of Mt Webb QLD, 1 – 3 Oct 1980 T. Weir", ANIC; 1, "Silver Plains Homestead Cape York Pen. Q 24 Dec.1962 J. L. Wassell", ANIC; 1, "AUSTRALIA. n Qld.15 km NW of South Johnstone light trap 17. x. 1986, Fay & Halfpapp, "QPIM; 1," "The Boulders" via Babinda, N. Qld 15.xi.1969 B. Cantrell.", "UQIC Reg# 53669", UQIC; 1, "Upper Mulgrave River N. Qld. 1-3.xii.1965. Cent Qld. B. Cantrell", "UQIC Reg# 53665", UQIC.

Description (number examined, 29)

Habitus. Length 3.2 – 4.7 mm., relatively flat, broadly oval.

Head. Dark reddish-yellow to nearly black, antenna light reddish-yellow to reddish-yellow. Small, width between eyes 2.2x dorsal width of eye. Moderately and evenly punctate. Frons with sides concave, front edge quite strongly concave, edges beaded. Segment 1 of antenna large, barrel-shaped; segment 2 smaller, cylindrical; segment 3 shorter, narrower; segments 4 – 10 long, relatively broad, front edge slightly concave, segment four longest; segment 11 a little longer than segment 10.

Pronotum. Dark reddish- yellow to nearly black. Short, broad. Evenly and moderately densely punctate, each puncture with a moderately long golden seta. Hind angles obtuse, front edge sinuate, sides beaded.

Scutellum. Dark reddish-yellow. Sides approximately equal length, lateral two weakly convex. Strongly and evenly punctate.

Elytron. Dark reddish-yellow, disc tending lighter. Side narrowly flanged. Moderately and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide in front gradually narrowing to near apex, front portion weakly and shallowly grooved.

Ventral surface. Light reddish-yellow to reddish-yellow. Pronotal process very narrow between procoxae, apical portion not much wider, strongly keeled. Mesosternum with narrow, triangular groove for reception of pronotal process; tip reaching past level of front of mesocoxae. Rear triangular midline extension of metasternum as long as wide; front extension about twice as wide as long sometimes semicircular rather than triangular. Metacoxal plate about twice as wide as long, with anterio-lateral corner extending some way along metasternum; hind edge moderately concave; sides weakly beaded; posteriolateral angles rounded. Metatrochanter small, almost twice as long as wide. Metafemur greatly swollen, widest just before middle, with small notch on hind edge near base; reddish-yellow often darker on outside edge. Dorsal metatibial spine relatively long, broad, about twice size of ventral spine and approximately length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined.

Male

Tergite 7 broadly triangular, with apodemes, with rectangular apical process (Fig. 2g). Penis very small, simple, not divided into basal piece and trigonium, elongate, tip rounded, without parameroids (Fig. 15). Tegmen about as long as penis, with wide transverse basal bit, lobes thin, sinuate, bulbous at tips (Fig. 15).

Variation

The colour is darker in some and the contrast between the lighter disc of the elytra and the darker sides is variable. The hind edge of the metacoxal plate varies from weakly to quite strongly concave. The relative lengths of the tegmen and penis vary a bit.

Etymology

Latin. "Rufus" – red, "rotundus" – round.

Notes

A relatively rare, moderately sized, shiny, dark reddish species readily recognised by its broadly oval, almost rounded, shape, weakly to moderately convex hind edges of the metacoxal plates, weakly grooved front portions of the elytral epipleura, long metatibial spine and the 7th tergite in the males with a pronounced apical process unique in Australian *Scirtes*. The male genitalia are unlike any other Australian *Scirtes* in having a small, weak, penis much shorter than the tegmen.

The species is widespread in north Queensland and is also known from Madang on the north coast of New Guinea. The only habitat records are one from a tree hollow and one from bamboo internodes suggesting that the species may breed in such situations.

Scirtes tindaleensis sp. nov.
(Figs 1, 16)

Types

Holotype

male, "Qld. Greenvale 70km SW at light 14 – 24 Mar 1995 A. J. Watts", SAMA.

Paratypes

65; 2, "NT. Kakadu NP c.1km S of Arnhem Hwy on Pine Creek Rd. M.V. Light 25 – 30 Mar. 1980 M. B. Malipatil", NTM; 52, "Tindale, N.T. 14.31S 132.22E 1 – 20 Dec.1967 light trap W. J. M. Vestjens", 47, ANIC, 5 NMV, 2 slides SAMA; 1, "Burrell's Ck Stuart H'way, N.T. 25 Nov. 1972 D.H.Colless", ANIC; 1, "Valley of lagoons via Areenvale Apr. 1988 n. Qld. K. H. Halfpapp", QPIM; 1 "Iron Range Cape York Pen. N. Qld. 1-4.v.1973 G. B. Monteith", QM; 1, "Captain Billy Creek Cape York Pen, N, Qld.142 50E 11 40S 9-13 vii.1975 G. B. Monteith", QM; 1, "3 mi S of Marmor, Q. 29 mi SSW of Rockhampton 23.43.5S 150, 42E 13 xii.1968. at light Britton & Misko", ANIC; 2, "NT Lake Bennett area c 25km SE of Manton Dam 25 – 30 Dec 1979 M. B. Malipatil" NTM; 11, "U.A.R. N.T. Feb.21.1967 Coll. C.S.Li", NTM.

Description (number examined, 66)

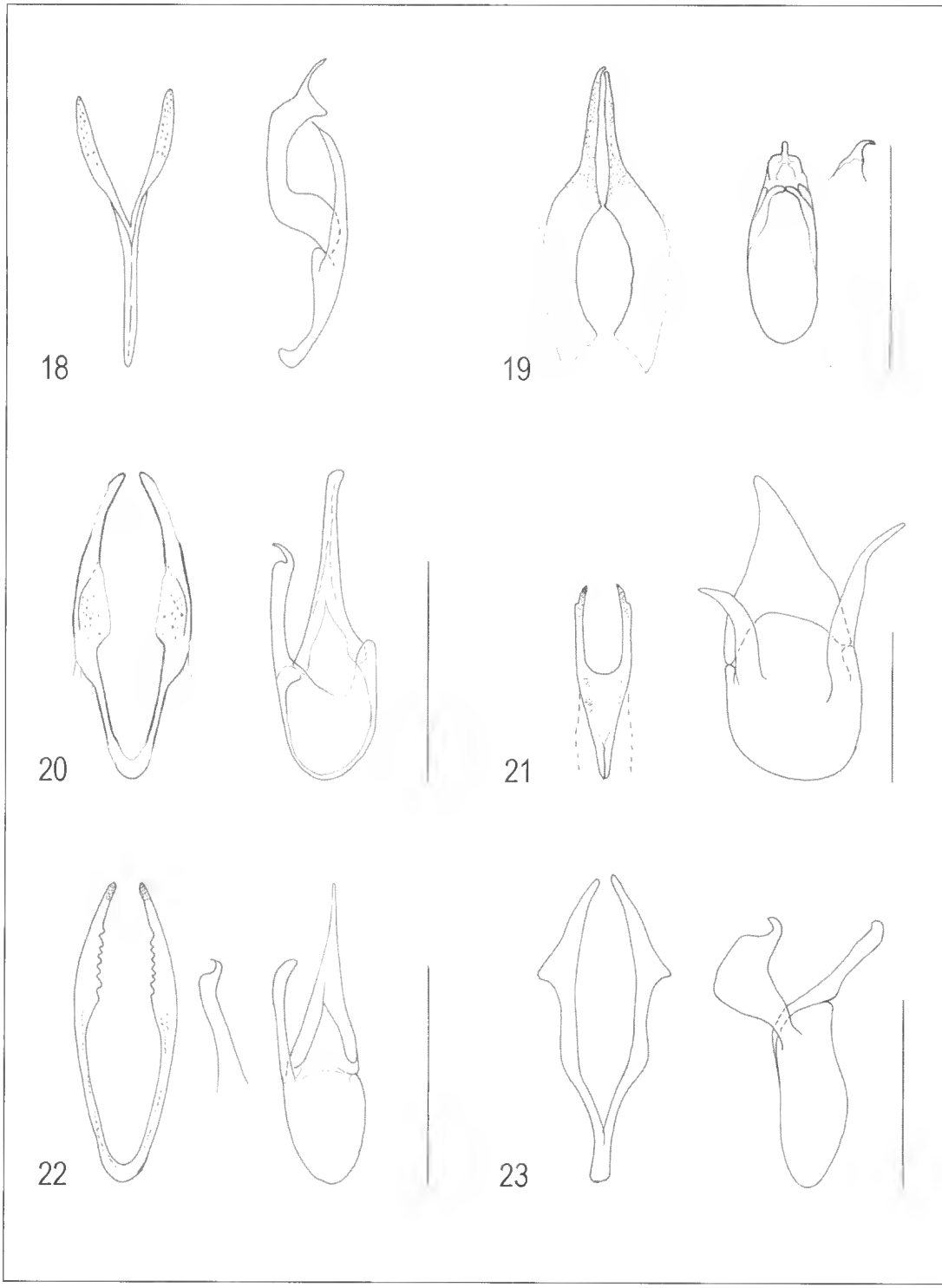
Habitus. Length 3.5 – 4.9 mm., relatively flat, oval.

Head. Reddish-yellow to dark reddish yellow; antennae light reddish-yellow. Relatively small; width between eyes about 2.5x dorsal width of eye. Strongly, quite densely and evenly punctate. Frons with sides diverging, front edge straight or weakly concave, edges beaded. Segment 1 of antenna large, barrel-shaped; segment 2 smaller, cylindrical, segment 3 as long as segment 2 but narrower; segments 4 -10 long, narrow, cylindrical; segment 11 approximately the same length as segment 10.

Pronotum. Reddish-yellow to dark reddish-yellow. Short, broad. Evenly and moderately punctate, each puncture with a moderately long golden seta. Hind angles obtuse, anteriolateral angles projected forward, sides weakly beaded.

Scutellum. Reddish-yellow to dark reddish yellow. Sides approximately equal length, lateral two convex.

Elytron. Reddish-yellow to dark reddish-yellow, with diffuse darker areas. Sides subparallel, weakly and narrowly flanged, more strongly towards front. Moderately and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide at front, evenly narrowing to near base.



Figs 18-23. Dorsal views of tegmen (left) and penis (right). Lines = 0.5 mm. 18. *Scirtes baroalba* sp. nov. 19. *S. beccus* sp. nov. 20. *S. brisbanensis* Pic. 21. *S. calmi* sp. nov. 22. *S. crassiantennae* sp. nov. 23. *S. cygnus* sp. nov.

Ventral surface. Reddish-yellow occasionally with darker areas. Pronotal process very narrow for whole length, strongly keeled. Mesosternum short, with small elongated groove for reception of pronotal process, tip reaching level of front of mesocoxae. Rear triangular midline extension of metasternum wider than long, narrower than front extension. Metacoxal plate (Fig. 1) much wider than long, with anterio-lateral corner extending some way along metasternum; hind edge very strongly concave; sides beaded; posteriolateral angles rounded. Metatrochanter small (Fig. 1). Metafemur greatly swollen, widest just before middle (Fig. 1), weakly notched on hind margin near apex. Dorsal metatibial spine relatively long. More than twice size of ventral spine and about two thirds length of segment 1 of metatarsus. Segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow; reticulation moderate fine, more pronounced towards rear; apex of apical ventrite truncated or weakly concave.

Male

No external differences between sexes. Penis elongate, basal piece elongate, trigonium deeply bifid towards apex; single parameroid long, thin pointed (Fig. 16). Tegmen a little shorter than penis, with two well separated lobes partially enclosing penis, each lobe broadly triangular near base, thin towards apex which is weakly clubbed (Fig. 16). The distal portions of penis and tegmen often visible in preserved specimens.

Variation

Occasional specimens with lighter sutural region on elytra compared with rest of elytra.

Etymology

Named after the town where many of the specimens were collected.

Notes

A large, elongate, dark reddish species, broadly sympatric with the two other large species with concave edges to the metacoxal plates: *S. kaytae* and *S. emmaae*. Separated from *S. kaytae* by the lack of dark areas on the elytra, any hint of an upturned front edge to the frons and the antenna are thinner with the segments symmetrical. Separated from *S. emmaae* by the more elongate shape, darker colour and more strongly concave hind edges to the metacoxal plates. *Scirtes emmaae* and *S. kaytae* are most clearly separated from this species by the male genitalia (the tips of which are often visible in preserved specimens): *S. emmaae* has small triangular protrubances near the tegmen tips (Fig. 6); *S. kaytae* has a distinct hook on the tip of the penis (Fig. 12); *S. tindaleensis* has swollen tips to the tegmen lobes (Fig. 16).

b) ***Scirtes helmsi*** species complex.

The description of *S. helmsi* is placed first, the rest are in alphabetical order.

Scirtes helmsi Blackburn, 1891
(Figs 24, 40)

Type

Holotype

male; "T 3811 A7" Blackburn coll 1910-236" "Scirtes Helmsi, Blackb." Specimen remounted with genitalia extracted and mounted on same card. NHM.

The type locality is given as "Victoria; taken near Benalla" by Blackburn (1891).

Description (number of dissected males examined, 9)

Habitus. Length 2.8 – 4.1 mm., relatively flat, elongate.

Head. Reddish-yellow to dark chocolate-brown, often with darker patches; antenna light reddish –yellow to dark brown, basal segments lighter. Eyes small, width between eyes about 3.0x dorsal width of eye. Moderately and evenly punctate, each puncture with a moderately long seta. Frons with sides weakly diverging, front edge straight or weakly concave, edges weakly beaded. Segment 1 of antenna barrel shaped; segment 2 about half as long and narrower, barrel-shaped; segment 3 about same size as segment 2, narrower, wider towards base; segment 4 about twice length of segment 3; segments 5 – 10 subequal, narrow, cylindrical, a little shorter than segment 4; segment 11 elongate/oval, a little longer and flatter than segment 10.

Pronotum. Brown, margins narrowly lighter yellow-brown. Short, broad. Punctures moderately dense, small, each puncture with a moderately long golden seta. Hind angles obtuse, front edge sinuate, sides weakly beaded.

Scutellum. Yellow-brown, usually lighter than elytra. Equilateral triangle or slightly wider than long, lateral sides weakly convex.

Elytron. Chocolate- brown to dark brown. Sides weakly flanged in basal third. Moderately and evenly punctate, each puncture with a short yellow seta. Epipleuron relatively wide in front quarter, becoming narrower over rest of elytron, front portion flat.

Ventral surface. Yellow-brown to dark reddish-yellow, often with diffuse darker and lighter areas. Pronotal process very narrow. Mesosternum with small elongate area in midline in front for reception of pronotal process; rear tip rounded, reaching past front

of mesocoxae. Front extension of metasternum in midline small, bounded behind by ridge; rear midline extension of metasternum short, about twice as wide as long. Metacoxal plate square, with anterio-lateral corner extending along metasternum; hind edge straight, sloping towards midline; sides beaded; posteriolateral angles rounded. Metatro-chanter small, relatively squat, about 1.7x as long as wide. Metafemur greatly swollen, widest a little before middle, weakly notched on rear margin near apex. Dorsal metatibial spine relatively short, about twice size of ventral spine and about half length of segment 1 of metatarsus; segment 1 of metatarsus a little longer than other segments combined. Ventrites with punctures small, shallow, reticulation, moderate, fine, more pronounced towards rear; apex of apical ventrite truncated or weakly concave.

Male

Little external difference between the sexes. Basal piece of penis short, round, orientated at right angles to trigonium (viewed laterally, Fig. 40); trigonium very long and thin, 3.8x length of basal piece, tip sharply pointed; single parameroid long, a little more than half length of trigonium, with well defined apical hook (Figs 24, 40). Tegmen about half length of penis, lobes thin, elongate, well separated (Fig. 24).

Notes

A moderately sized (for the group), elongate, dark coloured species, occasionally with vague darker areas on the head, with a very long, thin, golfclub-shaped penis, the tip of which often protrudes from the abdomen in preserved specimens. Generally larger and darker than the more common *S. brisbanensis* and *S. orientalis* from which it can be reliably separated only by the male genitalia.

In spring the larvae are common in temporary streams in open forest around Forreston in the Mt Lofty Ranges of South Australia.

Specimens examined

New South Wales. 1, CSIRO Lab. Chiswick nr Armadale NSW, Jan.1966, B. Clydesdale, ANIC. **Northern Territory**. 1, Birketts Woolshed, Mus Exp 1916 Central Australia, SAMA. **South Australia**. 5, 12km N Forreston, 5/3/03, C. Watts, SAMA; 2, Watts's Gully Mt Crawford Forest, 20/11/99, C. Watts, SAMA; **Victoria.** 1, near Benalla, Helms, BMNH.

Scirtes alastairi sp. nov.
(Fig. 17)

Types

Holotype

male, "QLD Greenvale 70 Km SW. at light 17 – 28 Jan 96, A. Watts", SAMA.

Paratypes

10; 4, "QLD Greenvale 70 Km SW at light 14 – 23 Feb 96 A. J. Watts", SAMA: 1, ditto, "28 Mar – 7 Apr 1995", SAMA; 1, ditto, "6 – 15 Dec 95", SAMA; 2, ditto, "1 – 10 Mar. 95", SAMA; 2, ditto, "17 – 26 Jan 96", SAMA.

Description (number examined, 11)

As for *S. helmsi* except as follows. Length 2.2 – 2.6 mm. Uniformly light reddish-yellow, head a bit darker in some. Interorbital width 2.4x dorsal width of eye.

Male

Basal piece of penis broad, oval; trigonium about as long or a little longer, curved in lateral view; one parameroid, stout, about half length of trigonium, sinuate (Fig. 17). Tegmen about half length of penis, lobes broad basally, finger-like apically, close together (Fig. 17).

Etymology

Named after my son who collected many of the specimens described in this paper.

Notes

A small yellow species resembling *S. storeyi*, recognised by the broad basal piece, thin trigonium and stout, sinuate parameroid of penis.

Scirtes baroalba sp. nov.
(Fig. 18)

Type

Holotype

male, "12. 47S 132 .51E Baroalba Creek Springs 19 km NE by E of Mt Cahill 28.x. 72, at light, E. Britton", ANIC. Mounted on slide.

Description (number examined, 1)

As for *S. helmsi* except as follows. Length 2.8 mm. Interorbital width 2.5x dorsal width of eye. Reddish-yellow, head tending darker, basal segments of antenna lighter.

Male

Basal piece of penis very narrow; trigonium about 1.5x as long as basal piece, irregularly shaped with thin spine near apex; parameroid nearly as long as trigonium, relatively stout (Fig.18). Tegmen about as long as penis, lobes well separated, finger-like (Fig.18).

Etymology

Named after the type locality.

Notes

A small reddish-yellow species from coastal

Northern Territory with a very distinctive parameroid of the penis (Fig.18).

Scirtes beccus sp. nov.
(Fig. 19)

Types
Holotype
male, "TE341 Tullamarine 4-9-75", ANIC.

Paratype
male, as for holotype, mounted on slide, SAMA.

Description (number examined, 2)
As for *S. helmsi* except as follows. Length 3.5 mm. Head dark reddish-yellow, pronotum reddish-yellow, darker on disc, scutellum light reddish-yellow, lighter than elytra, elytron reddish-yellow, ventral surface reddish-yellow, antenna and palps a little lighter. Interorbital width 2.7x dorsal width of eye. Metasternal plates depressed in midline, posterior-lateral angles prominently rounded, hind edges slanting inwards.

Male
Basal piece of penis elongate-oval, trigonium small, with half its length comprising a thin beak-like portion with the curve upwards (Fig. 19). Tegmen much longer than penis, lobes well separate, tips projecting well beyond penis, apical half of lobes thin, basal half, wide, triangular, partially enclosing penis (Fig. 19).

Etymology
Latin. "Beccus" – beak, a reference to the beak-like trigonium.

Notes
The relatively large size, strongly depressed metasternal plates and the beak-like trigonium to the penis distinguish this species. The metasternal plates are reminiscent of *O. improtectus* but the lower surface is still present and still provides a cover, albeit a very short one, for the metatrochanter articulation (cg Fig. 1c).

Scirtes brisbanensis Pic 1956
(Figs 20, 38)

Type
Holotype
male, with genitalia extracted and mounted on same card, "N. Guinea Biro 1900" "Queensland Brisbane" "Monotype 1956 Scirtes brisbanensis Pic." "Scirtes brisbanensis nm" "Scirtes brisbanensis Pic", HUNG.

Description (number of dissected males examined, 70)
As for *S. helmsi* except as follows. Length 2.2 – 3.7 mm. Interorbital width 2.5x dorsal width of eye. Reddish-yellow to dark reddish-yellow, tending to be darker towards front; ventral surface lighter.

Male
Basal piece of penis small, oval; trigonium long and thin, a little more than twice length of basal, apex expanded somewhat in dorsal/ventral plane; one or two parameroids, larger (left hand one) about two thirds as long as trigonium, abruptly narrowing into apical hook; second parameroid little more than small oval knob, often absent (Figs 20, 38). Tegmen a bit longer than penis, lobes well-separated, finger-like, tips rounded (Fig. 20).

Notes
A common, widespread species, possible more northern in distribution than *S. helmsi*. Recognised by the finger-like lobes of the tegmen and penis with a thin trigonium with slight apical dorsal/ventral expansion. The second parameroid is very small or absent, the main parameroid is abruptly hooked.

Specimens examined (dissected males only)
Queensland. 1, Big Mitchell Ck Mareeba-Molloy Road, 4 May 1967, D. H. Colless, ANIC; 1, Brisbane, 4/11/62, G. Monteith, UQIC Reg# 53678; 1, Bundaberg, 3/4/1975, at light, H. Frauca, ANIC; 1, Bushland Beach 20km N Townsville, A. J. Watts, 6-11/2/98, SAMA; 1, Cairncross Nat. Pk. Via Maleny, 7/4/66, G. Monteith, UQIC Reg# 53716; 3, Cairns Gordonvale, 15/1/99, leg. A. Podlussany, HUNG; 2, Colosseum Ck, 10mls S of Miriam Vale, 20/12/66, B.Cantrell, UQIC Reg# 53663; 1, Davis Ck Rd via Mareeba, 20/1/91, S. Defaveri, QPIM; 1, Deception Bay, 29/12/62, G. Monteith, UQIC Reg# 53645; 1, Gayndah, 11/1/64, H. A. Rose, UQIC Reg# 53722; 1, Greenbank, 8/1/63, G. Monteith, UQIC Reg# 53720; 1, Greenvale 70km SW, at light, 17 – 26 Jan 96, A. J. Watts, SAMA; 2, Homestead, Silver Plains, Via Coen, 11/2/64, G. Monteith, UQIC Reg# 53651/53647; 3, Knob lagoon, 30mi. NW of Doomadgee Mission, NW Qld., 22/5/72, G. Monteith, UQIC Reg# 53705; 1, Lawes, 6/4/63, A. MacQueen, UQIC Reg# 53699; 1, Ditto except, 18/12/62, G. Monteith, UQIC Reg# 53700; 2, 23km N of Mareeba, 12/11/89, R. I. Storey, at light, QPIM; Nardello's Lagoon nr Mareeba, 29/3/96, C. Watts, SAMA; Tin Can Bay. 22/1/99, leg. A. Podlussany, HUNG; 1, 30km N Marlborough, 24/2/81, Hangay & Herozeg, No 244, HUNG; 1, 21km E Mareeba, 21/1/91, at light, R. I. Storey, QPIM; 1, Moorehead R. N of Laura, 20/1/90, Fay & Halfpapp, QPIM; 1, Paradise Falls Bunya Mts Nat. Pk. 26.52S 151.35E, 6/10/84,

I. Naumann J. Cardale, ANIC; 1, 7km NE Tolga, Feb 1988, at light, Storey R. & D. E. Faveri, QPIM; 1, Tolga, 13 – 20/11/85, at light, J. D. Brown, QPIM; 1, Whiteside Xing, N. Pine River, 12/7/63, G. Monteith, UQIC Reg# 53718. **Northern Territory.** 1, 4ml SW Alice Springs, 18/2/66, Britton, Upton & McInnes, ANIC; 4, Batten Creek 16.10S 136, 31km WSW Borroloola, 15/4/76, at light, J. E. Feehan, ANIC; 3, 22km WSW of Borroloola 16.08S 136 06E, 16/4/76, at light, J. E. Feehan, ANIC; 3, Bessie Springs, 16.40S 135.51E 8km ESE of Cape Crawford, 12/4/76, at light, J. E. Feehan, ANIC; 1, 1km N of Boko Hill SW of Borroloola 12.26S 136.01E, 14/4/76, Key, Balderson *et al*, ANIC; 2, Calliope R 14ml SE Gladstone 23.50S 151.13E, 23/1/70, at light, S. Misko, ANIC; 46km SSW of Borroloola 16.28S 136.09E, 23/4/76, at light, J. E. Feehan, ANIC; 1, Katherine Gorge, 26/10/75, at light, M. J. Muller, ANIC; 2, Mc Arther River 16.10S 136.05E 48km SW by S of Borroloola, at light, 13/4/76, J. E. Feehan, ANIC; 2, McArthur River 16.47S 135. 45E 14km SW of Cape Crawford, 11/4/76, J. E. Feehan, ANIC; 1, Surprise Creek 16.25S 136.05E 45km SW by S of Borroloola, 14/4/76, at light J. E. Feehan, ANIC; 2, Roe Creek 12km SW by W of Alice Springs 23.46S 133.46E, 27/9/87, M. S. Upton, ANIC; 1, Tindale 14.31S 132.22E, 1 – 20/12/67, at light, W. J. M. Vestjens, ANIC. **New South Wales**. 4, Bogan River, SAMA; 2, New England, Glenroek, 5/11/97, leg. G. Hangay, HUNG; 1, Lachlan River 15km SW of Eublong, 28/12/75, Z. Liepa, ANIC; 2, Tamworth, Lea, SAMA; 2, Yuragir NP Station Creek, 20/11/82, J & E Doyen, at light, ANIC. **South Australia**. 1, 21km SE of Oodnadatta 30.40S 135.37E, 20/9/78, M. S. Upton, ANIC. **Victoria**. 1, Benalla, 18/2/67, G. Monteith, UQIC Reg# 53682. **Western Australia.** 5, 6km S Pinjarra, 23/10/96, C. Watts, SAMA

Scirtes calmi sp. nov.
(Fig. 21)

Types
Holotype
male; "15.36S 125.15E CALM Site 28/3 4km W of King Cascade W.A. 12 – 16 June 1988, T. A. Weir", "at light open forest", ANIC.

Paratypes
3; 2, as for Holotype, 1 ANIC, 1 SAMA; 1, "6.31S 12516E CALM Site 25/1 Synnot Ck. W.A. 17 – 20 June 1988 T.A.Weir", "at light open forest", ANIC.

Description (number examined, 4)
As for *S. helmsi* except as follows. Length 2.7 mm. Light reddish-yellow, diffusely darker towards front; ventral surface and appendages lighter. Interorbital width 2.5 x dorsal width of eye. Punctures on dorsal surface relatively large.

Male
Basal piece of penis broad, oval; trigonium about as long as basal piece, triangular, apex rounded; two parameroids each relatively stout, curved, about as long as trigonium, left hand one slightly hooked, right hand one with tip missing in only specimen (reconstructed in illustration) (Fig. 21). Tegmen about half-length of penis, lobes narrow, slightly notched on outside near apex (Fig. 21).

Etymology
Named after CALM (Western Australian Department of Conservation and Land Management) who financially supported the collection of the species.

Notes
Most easily recognised by the broad aedeagus with two strong parameroids.

Scirtes crassiantennae sp. nov.
(Fig. 22)

Types
Holotype
male, "AUSTRALIA, n. Qld. 11km WSW of Petford, 23.1.1988, R.I.Storey, at light", QPIM.

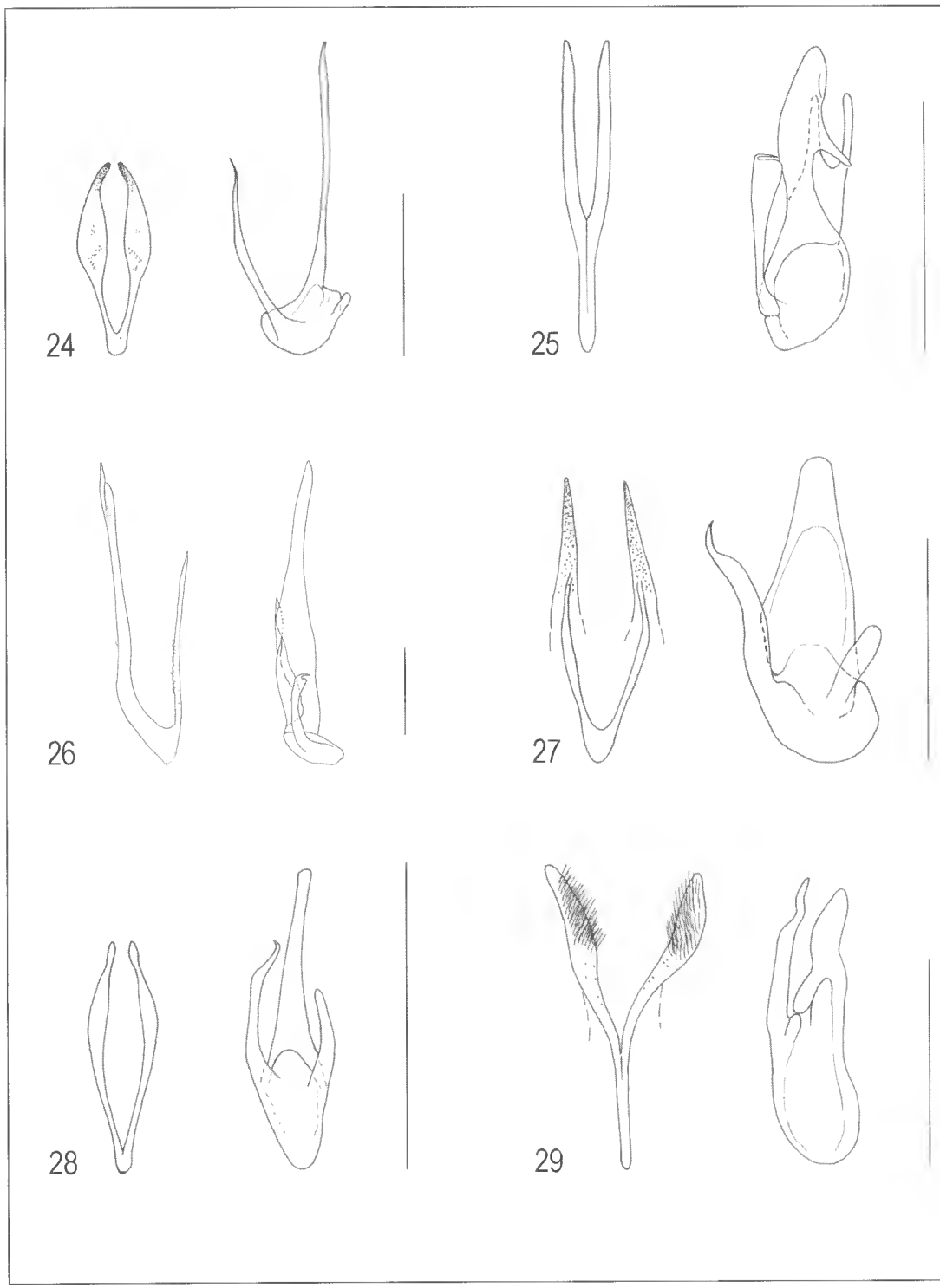
Paratype
1, male, "AUSTRALIA, n. Qld Petford-Irvinebank Rd, 6.iv.1992, Cunningham, DeFaveri", QPIM.

Description (number examined, 2)
As for *S. helmsi* except as follows. Length 2.5 mm. Uniformly reddish-yellow. Interorbital width 2.5x dorsal width of eye. Segments of antenna relatively short, stout, segment 10 only a little longer than wide.

Male
Basal piece of penis broad, oval; trigonium narrowly triangular, about twice as long as basal piece, sharply pointed; single parameroid about as long as basal piece, moderately broad, with small but distinct hook at apex (Fig. 22). Tegmen longer than penis, lobes well separated, relatively narrow, broader in middle, inner edge serrated in apical half (Fig. 22).

Etymology
Latin. "Crassus" – thick. A reference to the thick antennae.

Notes
A small, uniformly yellow, species (one specimen



Figs 24-29. Dorsal views of tegmen (left) and penis (right). Lines = 0.5mm. 24. *Scirtes helmsi* Blackburn. 25. *S. musica* sp. nov. 26. *S. nalyerensis* sp. nov. 27. *S. nigerpalpus* sp. nov. 28. *S. orientalis* sp. nov. 29. *S. peniculus* sp. nov.

has diffuse dark areas on head and pronotum) known only from the two type spceimens. Recognised by the tegmen lobes serrated on their inner edges. The antcnnae (male) are notieeably stouter than in most other speeies in the *S. helmsi* group.

Scirtes cygnus sp. nov.
(Fig. 23)

Types
Holotype
male, "Cow Bay, N. of Daintree, N. Qld.7-20.ii.1984, I. C. Cunningham", QPIM.

Paratypes
7; 3, as for holotype, 1, QPIM, 2 (1 slide), SAMA; 1, "Cow Bay, N of Daintree R., N. Qld, 18-25.i.1984, Storey & Cunningham", QPIM; 1, Cow Bay, N of Daintree, N. Qld, 25.i-7. ii. 1984, I. C. Cunningham", QPIM; 1,. "Iron Range, Cape York Pen. N. Qld. 1-4. v. 1973, G. B. Monteith", QM.; 1, ditto except '26 May – 2 June 1971"," UQIC Reg# 53662", UQIC.

Description (number examined, 8)
As for *S. helmsi* except as follows. Length 2.0 – 2.8 mm. Uniformly light reddish-yellow. Interorbital width 2.2x dorsal width of eye.

Male
Basal piecc of penis relatively large, narrowly oval; trigonium narrow, about two thirds as long as basal, slightly expanded at apex; single paramcroid as long as trigonium, broad, with hook at apex (Fig. 23). Tegmen longer than penis, lobes well-separated, relatively thin, with large triangular expansion in middle partially enclosing penis (Fig. 23).

Etymology
Latin. "Cygnus" – swan, a refcrenee to the swan-like parameroid.

Notes
A small golden speeies recognised by the swan-shaped parameroid and triangularly shaped middle seetions of the tegmen lobes which partial enelose the penis.

Scirtes musica sp. nov.
(Fig. 25)

Types
Holotype
male, "15.03S 145.09E 3 km NE of Mt Web Qld., 1-3 Oet. 1980, T. A. Weir", ANIC.

Paratype
male, as for Holotype, slide, SAMA.

Description (number examined, 2)
As for *S. helmsi* except as follows. Length 1.8 – 2.4 mm. Uniformly light reddish-yellow. Interorbital width 2.4x dorsal width of eye.

Male
Basal piece of penis short, round; trigonium relatively broad, twice as long as basal, asymmctrie with a strong lateral spine; two parameroids, both nearly as long as trigonium, left hand one thin, widening towards apex, terminating in a small hook, right hand one bifid with two long finger-like pieces (Fig. 25). Tegmen about as long as penis, in shape of tunning-fork (Fig. 25).

Etymology
Latin. "Musica" – musie, a reference to the tunning-fork shape of the tegmen.

Notes
A small very golden speeies recognised by the complex penis with a prominent spine and the tunning-fork shaped tegmen.

Scirtes nalycrinensis sp. nov.
(Fig. 26)

Types
Holotype
male, "WA Lake Nalyerin 33 08S 116 22E CHS Watts 6/10/03", SAMA.

Paratypes
5 (3 slides), as for holotype, SAMA.

Description (number examined, 6)
As for *S. helmsi* except as follows. Length 3.5 – 4.2 mm, elongate oval. Light chestnut, head, disk of pronotum, antennae other than basal segments darker. Side of elytron weakly flanged in front half. Interorbital width 3.0x dorsal width of eye.

Male
Basal piece of penis very small, oval; trigonium long, relatively broad in basal half narrower in apieal half, basal half with additional 'flap' adpressed to one side; single parameroid relatively short, thin, with abrupt apieal hook (Fig. 26). Tegmen lobes thin, asymmetrie, one longer than penis with tip sharply pointed and projeeting well beyond tip of penis; shorter lobe thin and about two-thirds length of other, with small setae in basal half (Fig. 26).

Etymology
Named after the type locality.

Notes
A moderately sized species with relatively large

eyes and an extremely long narrow lobe to the tegmen which projects well beyond the end of the penis which itself is relatively long. At first sight very reminiscent of *S. helmsi* but in that species it is the trigonium which is elongate and projecting.

Known only from Lake Nalyerin in the Jarrah forest of Southwestern Western Australia. The holotype was collected from a flowering Hakea beside the lake. The other specimens were bred from larvae that were abundant in the shallow lake.

Scirtes nigerpalpus sp. nov.
(Figs 27, 42)

Types
Holotype
male, "WA 2.5 Km W Serpentine 23/9/00 C. Watts", SAMA.

Paratypes
73, as for holotype, SAMA; 65, "12k W Serpentine WA, 24/10/96, C. Watts", SAMA; 9, "6 km S Pinjarra, 23/10/96, C. Watts", SAMA; 1, "Swan R Lea", SAMA; 3, "32.23S 115.59E 3km SE by S Serpentine WA 2 Oct 1981 I. D. Naumann J. C. Cardale", ANIC; 1, "33,51S 123.00E Thomas River 23 km NW by W of Mt Arid WA 4-7.xi.1977 J. F. Lawrenec", ANIC.

Description (number examined, 74)
As for *S. helmsi* except as follows. Length 2.6 – 3.7 mm. Head black or very dark brown; pronotum dark brown to black with narrow yellowish border; scutellum and elytra dark brown to black; ventral surface dark brown to black, trochanters and knees lighter. Interorbital width 3.0x dorsal width of eye. Metafemur relatively narrow (Fig. 1b).

Male
Basal piece of penis relatively short, oval; trigonium relatively broad, narrowing towards apex, about 2x length of basal piece; two parameroids, left hand one relatively broad, nearly as long as trigonium, narrowing abruptly near apex into thin, slightly curved, apical portion, right hand one short, thumb-like (Fig. 27). Tegmen about as long as penis, lobes well separated, narrow, anther-like, tips pointed (Fig. 27).

Etymology
Latin. "Niger" – black.

Notes
A moderately large almost black species recognised by its dark colour, including the base of the antennae and the palpi, moderately expanded metafemurs, relatively small eyes, short basal piece to the penis, broad spatulate trigonium and two parameroids, the larger, left hand one, with a relatively abrupt apical hook.

Like *S. pinjarraensis, S. nigerpalpus* is only known from near Pinjarra in Western Australia. It can be separated from *S. pinjarraensis*, which is common in the same habitat, by its larger size, smaller eyes and darker colour, including antennal bases, palpi and scutellum. In a few specimens the pronotum is reddish-yellow in contrast to the dark head. In these the antenna and palpi are lighter than usual. *Scirtes orientalis* from Eastern Australia seems close but is much lighter coloured, has broader metafemurs, larger eyes and has a narrower trigonium to the penis.

The larvae are common in shallow ditches in spring and the adults are common on nearby flowering shrubs.

Scirtes orientalis sp. nov.
(Figs 28, 43)

Types
Holotype
male, "Russell R. at Belenden Ker Landing, N Q., 5m 24 Oct-9 Nov. 1981 EARTHWATCH/ QLD.MUSEUM Malaise trap, rainforest", ANIC.

Paratypes
24; 2, as for holotype, one of which bears additional label "A.N.I.C. COLEOPTERA Voucher No 83-0387": 2, "35,16S 149.06E Black Mtn ACT, 600m., Dec 1987, M.E.Irwin, ex Malaise trap", ANIC; 1, "Brandy Creek Qld. 18 km E Proserpine, 100m., 21 June – 10 Aug.1982, S & E Peck SBP43", ANIC; 1, "Bruxner Park, Via Coff's Harbour, 25.xi. 1967. NSW. G. Monteith" "UQIC Reg# 53712", UQIC; 1, "Cann River, N. Vic, 28.i.1967 G. Monteith" "UQIC Reg# 53715", UQIC; 1, "AUSTRALIA: n Qld. Danbulla S.F. 11km NE of Yungaburra, 21.12.1986, Storey & De Faveri", QPIM; 1, "AUSTRALIA: N. QLD. Danbulla S.F. via Yungaburra, 13.11.1992, at light, Storey, De Faveri & Huwer", QPIM; 1, "Kiola Forest Pk. NSW, 20m., 15km N Batemans Bay, 30 Aug.1982, S. & J. Peck SBP119" "wet sclerophyll litter", ANIC; 1, AUSTRALIA. n Qld. 5 km NNW of Kuranda 1.v-14.vi.1985 Storey & Halfpapp" "MDFl Intercept Trap Site No 24", QPIM; 2, "AUSTRALIA Narrabeen" "NSW", "22.2.1984, leg. G.Hangay", HUNG; 1, ditto except 29.12.1984, SAMA; 1, ditto except 25.12.1984, HUNG; 1 slide, ditto "23-xii-1983" SAMA; 2, Russell R. at Bellenden Ker Landing, N.Q. 5m., 24 Oct-8 Nov 1981, EARTH WATCH/QLD.MUSEUM, Beating, rainforest", QM; 6, "Russell R. at Belenden Ker Landing, N Q., 5m Nov 1 1981 EARTHWATCH/QLD.MUSEUM"

"Q.M BERLESATE NO 361, 17.16.S, 145.57E, Palm swamp. Moss on tree trunks", 5 QM, 1 slide SAMA.

Description (number of dissected males examined, 23)

As for *S. helmsi* except as follows. Length 2.4 – 3.2 mm. Dorsal surface reddish-yellow with darker markings on head and pronotum; ventral surface reddish-yellow, palpi and antennal bases lighter. Interorbital width 2.2x dorsal width of eye.

Male

Basal piece of penis small, oval; trigonium elongate triangular, a little more than twice length of basal piece; two parameroids, left hand one largest, about two-thirds as long as trigonium, relatively broad, with terminal hook, right hand one finger-like, about half length of other (Fig. 28). Tegmen about two-thirds the length of the penis, lobes moderately separated, thumb-like (Fig. 28).

Etymology

Latin. "Orient" – east, a reference to its distribution in Australia.

Notes

The extent of the dark markings on the head and pronotum are variable and in some specimens the base of the elytra is diffusely darker than the rest of the elytra. The male genitalia resemble *S. nigerpalpus* but have the trigonium consistently narrower and the tips of the tegmen lobes rounded rather than pointed. They also differ from *S. nigerpalpus* in their much lighter colour, broader metafemurs and larger eyes.

Four specimens from the Northern Territory may belong to this species. The male genitalia (one specimen only) appear close but they are smaller (2.1 – 2.4 mm long) and the metafemurs are a little narrower: 2.1x as long as wide as against 1.8x.

Associated specimens

2, 12.47S 132. 51E Baroalba Creek, nr. source, rainforest, 19km NE by E of Mt Cahill, NT., 29/10/72 by sweeping, D. Colless", ANIC; 2. 12.47S 132. 51E Baroalba Creek, 19km NE by E of Mt Cahill, NT., 29/10/72, at light, E. Britton, ANIC.

Scirtes peniculus sp. nov.
(Fig. 29)

Types

Holotype

male; 12.57S 132.33E Jim Jim Creek, N.T. 19 km WSW of Mt Cahill, 24.10.72, at light, E. Britton", ANIC.

Paratypes

8; 5, as for holotype, 2 ANIC, 3 SAMA; 1 slide, "12. 47S 132.51E Baroalba Creek Springs, NT 19 km NE by E of MT Cahill 28.x.72, at light, E. Britton", SAMA; 1,"14.49S 126.49E Carson escarpment W.A., 9 – 15 Aug. 1975, I.F.B. Common and M. S. Upton", ANIC; 1, "15.02S 126.55E Drysdale River WA., 3 – 8 Aug 1975, I.F.B. Commom and M. S. Upton", ANIC; 2," 12.52S 132.47E Nourlangie Creek, N.T. 8km E of Mt. Cahill, 27.x.72, at light, E. B. Britton", ANIC; 1, "Jabiru, N.T. 17-20. 9.1982, R.I.Storey, at light", QPIM; 1 slide, "12.46S 132 39E 12 km NNW of Mt Cahill, NT. 25.x.72, at light, E. Britton", SAMA; 1 slide, "12. 50S, 132. 51E 15 km E by N of Mt Cahill, NT. 29.x.72, at light, E. Britton", SAMA; 1, "12,50S 132,51E 16km E by N of Mt. Cahill.N.T. 16 xi.1972 T. Weir & A. Allwood", NTM; 1, "12.52S 132.46E Nourlangie Creek 6km E of Mt Cahill, N.T. 12.x.1972 T. Weir", NTM.

Description (number of dissected males examined, 6)

As for *S. helmsi* except as follows. Length 1.8 – 2.5 mm. Light reddish-yellow to quite dark chestnut, head tending darker, antennae, palpi and extremities of legs lighter. Interorbital width 2.0x dorsal width of eye.

Male

Basal piece of penis rather narrowly oval; trigonium shorter, about half as long and wide, irregularly shaped, quite strongly curved in lateral view; single parameroid about as long as basal piece, relatively stout, sinuate or weakly hooked (Fig. 29). Tegmen a little longer than penis, lobes with very prominent oval area of strong setae a little below apex (Fig. 29).

Etymology

Latin. "Peniculus" – brush/tuft, a reference to the brush-like groups of setae on the tegmen.

Notes

A small, relatively dark, northern species, recognised by the irregularly shaped trigonium and tegmen lobes with a strong bush of setae near apex.

Scirtes pinjarraeusis sp. nov.
(Figs 30, 39)

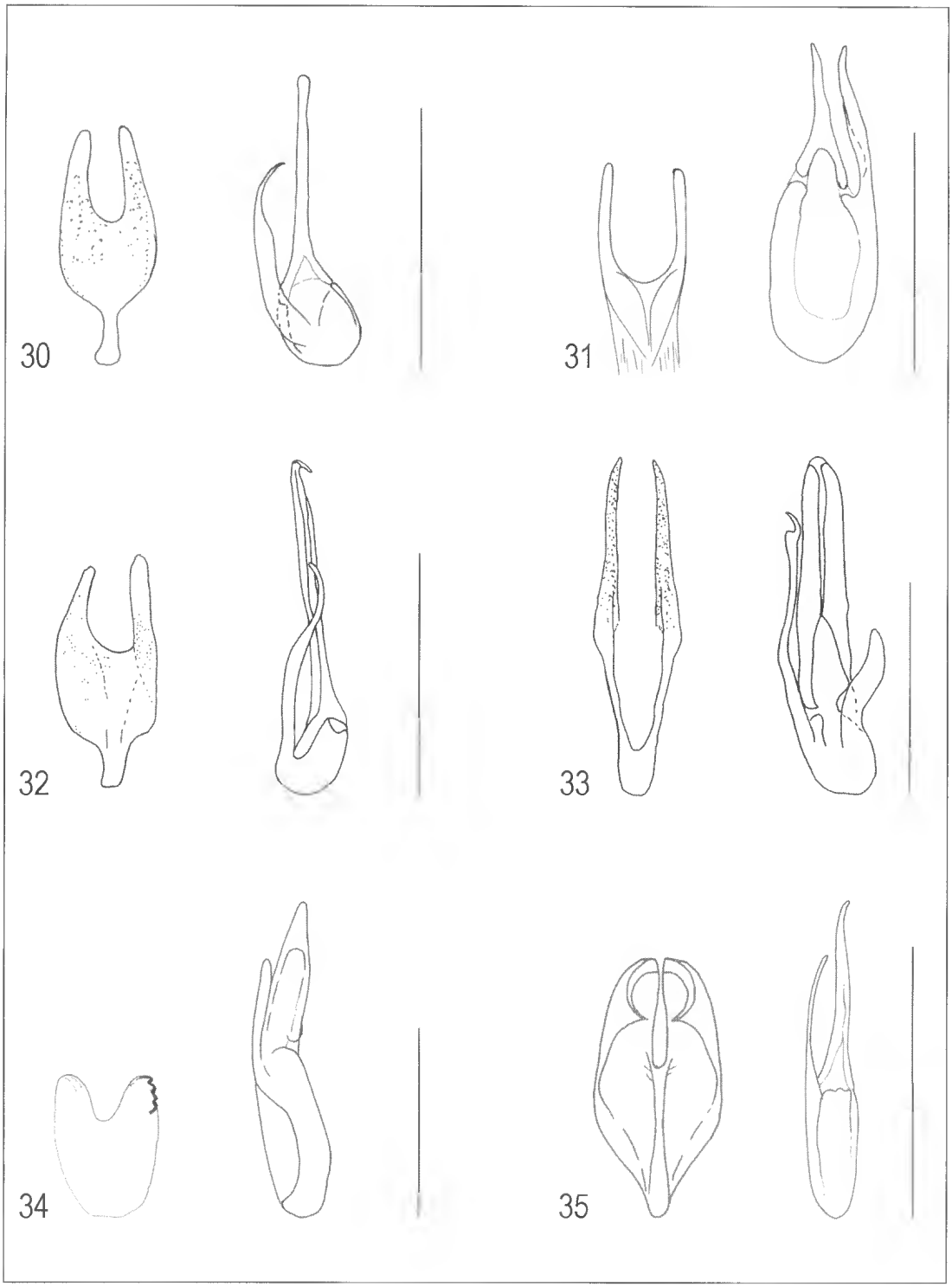
Types

Holotype

male, "12 K W Serpentine WA, 24/10/96, C. Watts", SAMA.

Paratypes

45; 40 (4 slides), "12 K W Serpentine WA,



Figs 30- 35. Dorsal views of tegmen (left) and penis (right). Lines = 0.5mm. 30. *Scirtes pinjarraensis* sp. nov. 31. *S. podlussanyi* sp. nov. 32. *S. pygmaeus* sp. nov. 33. *S. rivularis* sp. nov. 34. *S. spatula* sp. nov. 35. *S. storeyi* sp. nov.

24/10/96, C. Watts", SAMA; 5, "6K S Pinjarra WA, 23/10/96, C. Watts", SAMA.

Description (number examined, 46)

As for *S. helmsi* except as follows. Length 1.7 – 2.7 mm. Head dark reddish-yellow; pronotum dark reddish-yellow with yellowish borders of variable width; scutellum yellow; elytron reddish-yellow to dark reddish-yellow; ventral surface reddish-yellow with diffuse lighter areas; base of antenna lighter. Interorbital width 2.5x dorsal width of eye.

Male

Basal piece of penis short, oval; trigonium long and thin, 2.5 – 3.0 x as long as basal piece, slightly knobbed at tip; single parameroid nearly as long as trigonium, relatively narrow, rapidly narrowing in apical quarter to a thin curved portion (Fig. 30). Tegmen a bit shorter than penis, lobes well separated, narrow, tips pointed (Fig. 30).

Variation

There is considerable variation in the colour of the head and pronotum from completely reddish-yellow to having extensive areas of lighter colour.

Etymology

Named after the type locality.

Notes

A small species with a very limited known distribution, recognised by the short basal piece to the penis and the single parameroid with long, thin, curved apical portion (Fig. 30).

In spring adults are common on flowering shrubs beside water in the area around Pinjarra in the Southwest of Western Australia. Here the larvae are common among dead leaves and debris in shallow ditches. *Scirtes nigerpalpus* is also abundant in the same places. Apart from differences in the penis *S. nigerpalpus* is larger and almost totally black including antennal bases and palpi.

Scirtes podlussanyi sp. nov.
(Fig. 31)

Type

Holotype

male, AUSTRALIA Queensland Tin Can Bay, 99.1.22.leg. A. Podlussany" SAMA.

Description (number examined, 1)

As for *S. helmsi* except as follows. Length 2.7 mm. Light chestnut, scutellum, rear margin of pronotum, appendages and ventral surface reddish-yellow. Interorbital width 2.6x dorsal width of eye.

Male

Basal piece of penis large, oval; trigonium a little shorter, broad at base, evenly narrowing to rounded apex, curved upwards towards tip: single parameroid arising low on basal piece, relatively narrow, tip nearly reaching apex of trigonium (Fig. 31), viewed laterally basal half thick, apical half thinner and curved. Tegmen a bit shorter than penis, lobes well separated, narrowly finger-like (Fig. 31).

Etymology

Named after the collector.

Notes

A small dark species recognised by the large basal piece to the penis, parameroid nearly as long as trigonium and stirrup-like tegmen.

Scirtes pygmaeus sp. nov.
(Fig. 32)

Types

Holotype

male, "WA 1 km W Kodjinup Swamp 34 24 03S 116 38 37E CHS Watts 1/10/03", SAMA.

Paratypes

8 (3 slides), as for holotype, SAMA.

Description (number examined, 9)

As for *S. helmsi* except as follows. Length 2.2 – 2.5 mm, oval. Reddish-brown, scutellum, narrow border of pronotum, basal segments of antennae, palpi, portions of head and ventral surface including legs yellowish. Side of elytron weakly flanged in front half. Interorbital width 3.2x dorsal width of eye.

Male

Basal piece of penis small, oval, trigonium long and narrow, 2.5x the length of the basal piece, tip sharply bent to one side; single parameroid arising low on the basal piece, long, thin, curved towards apex (Fig. 32). Tegmen a little shorter than penis, broad lobes relatively short, well separated, slightly asymmetric (Fig. 32).

Etymology

Latin. "Pygmaeus" – dwarf, a reference to its small size.

Notes

A small, dark, Western Australian species with pale bases to the antennae. The long trigonium is unique within Australian *Scirtes* in having the tip sharply bent to one side.

All specimens were reared from larvae that were abundant in dead grass and other vegetation at the

edges of a large, seasonal, *Melaleuca* swamp.

Scirtes rivularis sp. nov.
(Figs 33, 41)

Types
Holotype
male, "WA 2km SW North Dandalup, 2/10/2003, C. H. S. Watts".

Paratypes
3 (1 slide), as for holotype, SAMA.

Description (number examined, 4)
As for *S. helmsi* except as follows. Length 3.4 – 3.5 mm, elongate oval. Light to relatively dark chestnut, head, areas on disk of pronotum, middle and apical segments of antennae and much of ventral side darker. Side of elytron weakly flanged in front half. Interorbital width 4.5x dorsal width of eye.

Male
Basal piece of penis oval, trigonium relatively long and broad, about twice as long as basal piece, apex rounded; two parameroids, left hand one long, nearly as long as trigonium, narrow, abruptly hooked at apex, right hand one about half length of left hand one, finger-like. (Figs 33, 41). Tegmen a little longer than penis, lobes well separated, finger-like, narrowing towards tips, tips rounded (Fig. 33).

Etymology
Latin. "Rivularis" – of a brook, a reference to the larval habitat.

Notes
A moderate sized species with relatively small eyes dark head, variegated pronotum and light coloured bases of legs. Close to the Eastern Australian *S. orientalis* but a little larger, darker and the parameroid crenulate on the bottom edge and the hook more abrupt (Fig. 41). The area of small spines on the top of the trigonium is only clearly visible on prepared slides.

All the known specimens were bred from larvae collected from the headwaters of a small stream running off an escarpment in the Darling Ranges in forest country east of North Dandalup in South-west Western Australia.

Scirtes spatula sp. nov.
(Fig. 34)

Types
Holotype
male, "Qld Greenvale 70km SW, at light, 29 Jan – 4 Feb 1997, A. J. Watts", SAMA.

Paratypes
2 males; 1, "Tolga N. Qld. i-ii.1980, N.Gough, J. D. Brown", QPIM. 1, "Katherine, N.T. 23.i. 1971 T. Weir & A. Allwood", NTM.

Description (number examined, 3)
As for *S. helmsi* except as follows. Length 3.3 – 3.4 mm. Dull reddish-yellow, parts of head and pronotum slightly darker. Elytra moderately flanged in front half. Width between eyes about 3x dorsal width of eye.

Male
Basal piece of penis narrowly oval; trigonium a little longer, moderately broad, sides parallel until close to apex where they converge to rounded tip; single parameroid arising low on basal piece, about as long as trigonium, relatively narrow, narrowing slowly towards rounded tip (Fig. 34). Tegmen only about half length of penis, lobes broad, moderately enclosing penis, with raised, strongly chitinized, toothed, inner portion near middle (Fig. 34).

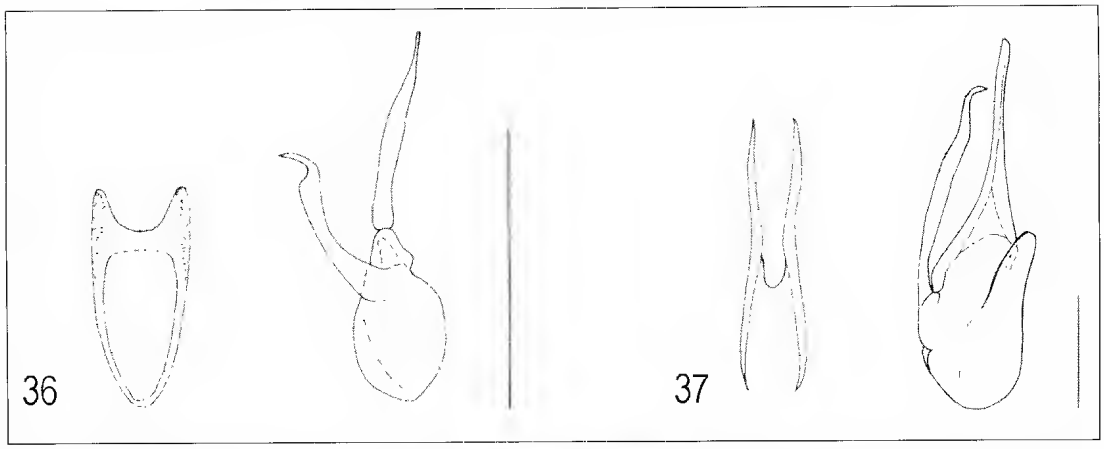
Etymology
Latin. "Spatula" – broad flat tool, a reference to the shape of the trigonium.

Notes
A moderately large species, recognised by the elytral edge moderately flanged, the spatulate trigonium, the single parameroid without a terminal hook and the enclosing, toothed tegmen.

Scirtes storeyi sp. nov
(Fig. 35)

Types
Holotype
male "QLD Greenvale 70km SW at light, 12 – 21 Apr 1995 A. J. Watts", SAMA.

Paratypes
17; 1, as for holotype, SAMA; 1, "Biloela QLD 3 Apr, 1982 R. Howell", ANIC; 1, AUSTRALIA n. Qld Granite Gorge 9.5 km SW of Mareeba, 9.12.1987, at light, Storey & de Faveri", QPIM; 2, "Qld Greenvale, 70 km SW, at light, 14 – 23 Feb 96, A. J. Watts, SAMA; 1 slide, ditto, "Feb 96", SAMA; 1 slide, ditto, "6 – 15 Dec 95", SAMA; 1, "Iron Range Cape York Pen, N. Qld. 1-4.v.1973 G B Monteith", QM; 1, "Homestead, Silver Plains Via Coen, N. Qld 20.x11.1964. G. Monteith", "UQIC Reg # 53650", UQIC; 1, "Australia, NT Humpty Doo 6km E, 9.2-4.3.1987, R. I. Story", QPIM; 1, "Kalpower X-ing 75 km NW of Laura N. Qld. 2.iv.1983, at light R. I. Storey", QPIM; 1, "4 miles S.W. of Lee Point Darwin NT, 6 Mar 1967, M. S.



Figs 36-37. Dorsal views of tegmen (left) and penis (right). Lines = 0.5mm. 36. *Scirtes triangulus* sp. nov. 37. *S. victoriaensis* sp. nov.

Upton", ANIC; 1 slide, "15.38S 125.125E CALM Site 28/3 4km W of King Cascade WA, 12 – 16 June 1988 T. A. Weir", "at light open forest", ANIC; 1, "15.10S 145. 07E 3.5km SW by S Mt. Baird QLD 3 5 May 1981 A. Calder", ANIC; 2, "AUSTRALIA n. Qld 11km WSW of Petford, 23.1.1988, R. I. Storey, at light", QPIM; 1, "Russell R at Bellenden Ker Landing N.Q. 5m 24 Oct – 9 Nov 1981 EARTHWATCH/QLD MUSEUM", "A.N.I.C. COLEOPTERA Voucher 83-0587", QM; 1, "16.31S 126.16E CALM Site 25/1 Synot Ck WA, 17 – 20 June 1988, T. A. Weir", ANIC; 1, "Murgenella, NT 4.viii.1982 C. Wilson & S. Collins", NTM; 1", N.T., Darwin, Lee Pt on Eucalyptus blossom 28.i.1980 M.Malipatil", NTM.

Description (number examined, 17)

As for *S. helmsi* except as follows. Length 2.0 – 2.4 mm. Light reddish-yellow, a bit darker on head. Interorbital distance 2.0x dorsal width of eye.

Male

Basal piece of penis narrowly oval, trigonium somewhat longer, thin, slightly sinuate in dorsal view, weakly curved in lateral view; single parameroid, thin, nearly as long as trigonium (Fig. 35). Tegmen as long as penis, lobes wide, partially enclosing aedeagus, with well-marked transverse, strongly chitinized ridge on inside near apex (Fig. 35).

Etymology

Named after Ross Storey, the Curator of Entomology at QPIM who kindly provided many of the specimens used in this revision including this species.

Notes

A small, light coloured, northern species, recognised by the long, thin, single parameroid and the enclosing tegmen with chitinized ridge.

Scirtes triangularis sp. nov.
(Fig. 36)

Types

Holotype

male, "Kuranda Range State Forest N. Qld 20 Apr. 1967 D. H. Colless", ANIC.

Paratypes

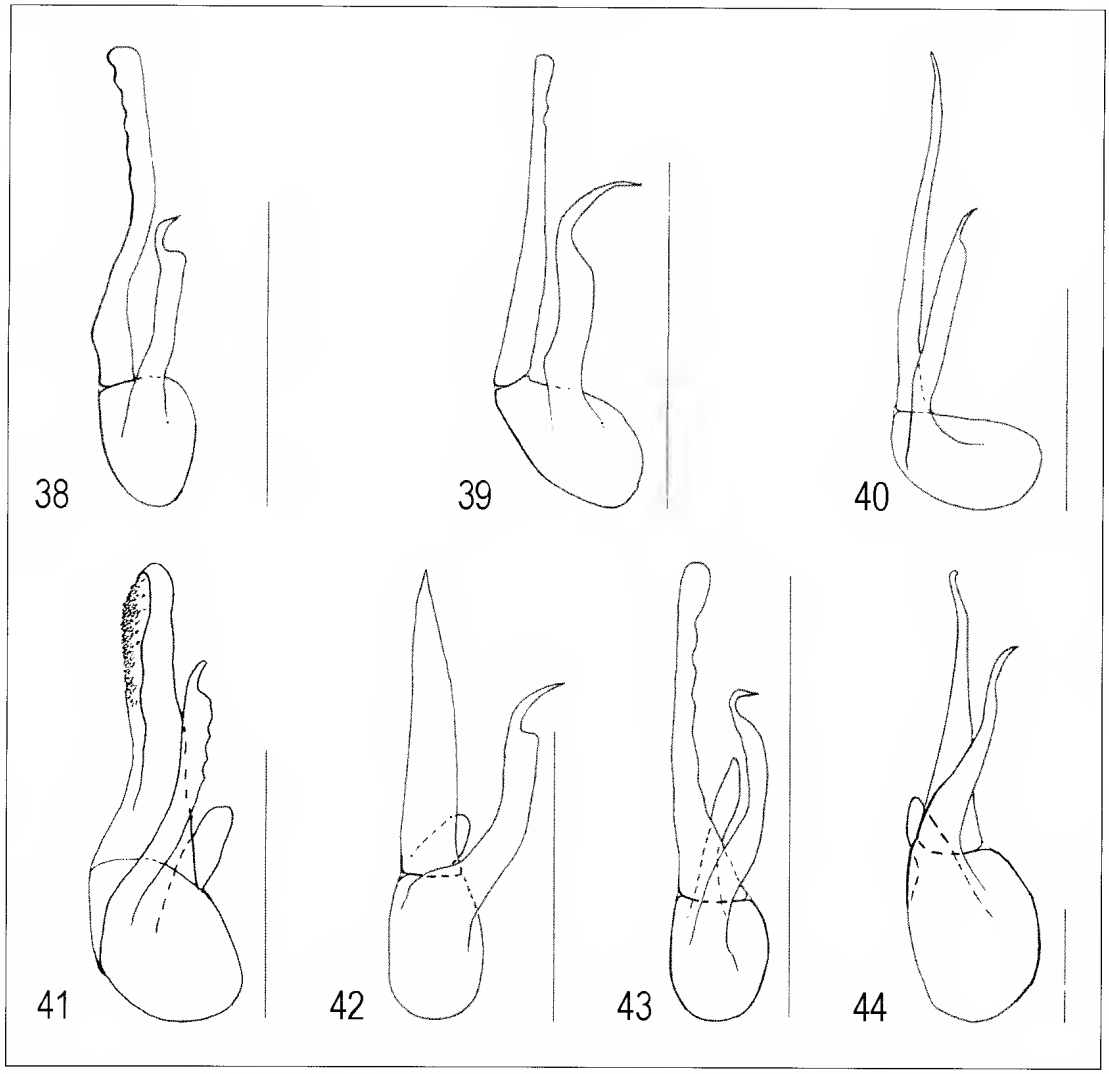
2; 1, as for holotype, ANIC; 1 slide, "Bamboo Ck., near Miallo N of Mossman, N. Qld. 25 Apr. 1967 D. H. Colless", SAMA.

Description (number examined, 3)

As for *S. helmsi* except as follows. Length 3.1 mm. Head, pronotum, scutellum and ventral surface reddish-yellow, elytra dark chestnut, lighter on disc with small triangular area of yellow near suture at apex. Interorbital width 2.5x dorsal width of eye.

Male

Basal piece of penis oval; trigonium almost as long, relatively narrow, with thin point at apex, sharply deflexed near base so that most of trigonium at right angles to rest of penis; single parameroid relatively narrow, as long as basal piece, weakly hooked at apex (Fig. 36). Tegmen about half length of penis, undivided except for apical fifth, lobes short, thumb-like (Fig. 36).



Figs 38-44. Lateral views of the penises of *Scirtes helmsi*-like species. Lines = 0.5mm. 38. *S. brisbanensis* Pic. 39. *S. pinjarraensis* sp.nov. 40. *S. helmsi* Blackburn. 41. *S. rivularis* sp. nov. 42. *S. nigerpalpus* sp. nov. 43. *S. orientalis* sp nov. 44. *S. victoriaensis* sp. nov.

Etymology

Latin "Triangulus" – having three angles, a reference to the triangular marking on the elytra.

Notes

A little known species with darkish elytra with distinctive triangular yellow area at apex in middle. Recognised by the sharply bent trigonium of the penis and short tegmen lobes.

Scirtes victoriaensis sp. nov.
(Figs 37, 44)

Types

Holotype

male, "Dimboola, Vic. Caravan Park, light trap 18.xi.73, S Misko", ANIC.

Paratypes

4; 1, " Benalla, Vic. 18.ii. 1967 G. Monteith" "UQIC Reg # 53681." UQIC; 1, "Kiata, V. 20.ix.18 F. E. Wilson", NMV; 1, "Noble Park, V. F. E. Wilson 28.6.19", "Scirtes helmsi id by J. Armstrong", NMV; 1, "Pakenham 31.12. 22 Vic C. Oke". "Scirtes helmsi id by J. Armstrong", NMV.

Description (number examined, 5)

As for *S. helmsi* except as follows. Length 3.8 – 4.3 mm, elongate oval. Chestnut, base of antenna lighter, parts of ventral surface darker; covered with prominent silver setae. Side of elytron weakly flanged in front half. Interorbital width 2.7x dorsal width of eye.

Male

Basal piece of penis oval, trigonium longer, widely triangular at base, rapidly narrowing to narrow shaft which is slightly expanded dorsal/ventrally, sharp ventral ridge for much of length; two parameroids, left hand one as long as trigonium, narrow, sinuate, right hand one much shorter, thick, thumb-like (Fig. 37). Tegmen a little shorter than penis, lobes well separated, long, thin, tips pointed (Fig. 37).

Etymology

Named after the State in which the specimens were found.

Notes

A relatively narrow, large, dark species from Victoria, recognised by the uniform dorsal colour, pale antennae bases, weak elytral flanging and long, thin, sinuate left parameroid (Fig. 37). The penis is unusually large and robust.

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